ORDER NO. VRD-8301-354

Service Manual

Video Cassette Recorder

Panasonic VHS

NV-332

Vol. 1	**Vol. 2**	**Vol. 3**	**Vol. 4**
Summery *Operating Instructions*	*Mechanical Adjustment Procedures* *Electrical Adjustment Procedures*	*Block Diagram* *Schematic Diagrams*	*Exploded View* *Replacement Parts List*

VHS

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

ORDER NO. VRD-8301-354

Service Manual

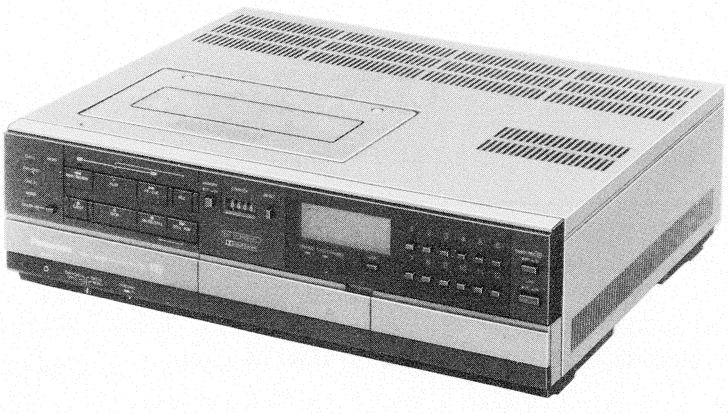
Video Cassette Recorder

Panasonic VHS

NV-332-EG

Vol. 1

Summery Operating Instructions



SPECIFICATIONS

Power Source:	220V AC 50/60Hz
Power Consumption:	Approx. 36 watts
Television System:	CCIR: 625 lines, 50 fields PAL/DDR SECAM colour signal
Video Recording System:	2 rotary heads, helical scanning system Luminance: FM azimuth recording Colour signal: converted subscarrier phase shift recording
Audio Track:	1 track
Tape Format:	Tape width 12.7mm high density tape
Tape Speed:	23.39mm/s
Record/Playback Time:	240 min. with NV-E240
FF/REW Time:	Less than 6.5 min. with NV-E240
Heads:	Video: 2 rotary heads Audio/Control: 1 stationary head Erase: 1 full track erase
Input Level:	Video: VIDEO IN connector (BNC) 1.0Vp-p, 75Ω terminate AV (ADIN45482) 1.0Vp-p, 75Ω terminated Audio: LINE IN jack (RCA) More than −20dB, more than 50kΩ (Monaral) AV (DIN45482) more than −10dB, more than 10kΩ
Output Level:	Video: VIDEO OUT connector (BNC) 1.0Vp-p, 75Ω terminate AV (DIN45482) 1.0Vp-p, 75Ω terminate Audio: LINE OUT jack (RCA) −6dB, less than 1kΩ AV (DIN45482) −6dB, less than 1kΩ RF Modulated: UHF channel 36 ± 4CH 75Ω terminate
Weight:	8.6kg
Dimensions:	430(W) × 125(H) × 358(D)mm
Accessory Supplied:	1 pc. DIN-RF Cable VJA0130
Optional Accessories:	Video cassette tape: NV-E240 Approx. 344m, 240 min. NV-E180 Approx. 258m, 180 min. NV-E120 Approx. 174m, 120 min. NV-E60 Approx. 88m, 60 min. Wired Remote Control Unit, NV-A33 Video Camera, WV-2600E, WV-3000E, WV-3200E

Weight and dimensions shown are apparoximate.
Specifications are subject to change without notice.

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INTRODUCTION

This service manual contains technical information which will allows service technicians to understand and service the Panasonic PAL VHS Video Tape Recorder Model NV-332EG.
The NV-332EG has many special features.
These features in addition to the basic PAL VHS Format make the unit on ideal one for your culture and enfertainment.

CONTENS

FEATURES 1-1
CONTROLS AND COMPONENTS 1-2
INSTALLATION CONNECTIONS 1-6
ADJUSTING THE TV SET TO THE VIDEO PLAYBACK CHANNEL 1-7
RECORDING AND PLAYBACK OF STEREO AND MULTIPLEX SOUND 1-8
CIRCUIT DESCRIPTION(DECORDER CIRCUIT) 1-9

*Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

FEATURES

Recording and playback of mono, stereo and multiplex programmes

The NV-332 can process mono, stereo and multiplex signals for recording and playback.
Recordings of the 3 kinds of sound signals can be made via the antenna input as well as the AV socket. Playback of stereo and multiplex signals is possible via the AV socket or the audio output sockets.

One-Touch Timer Recording (OTR)

With the One-Touch Timer Recording function (OTR), automatic recordings of 30, 60, 90 or 120 minutes duration are possible without programming the timer. Just select the channel to be recorded and press the OTR Button two to five times depending on the designed length of the recording.

Timer recording (14 days/1 programme)

The built-in timer allows you to record one TV programme up to two weeks ahead. There is also an everyday recording facility.

Recording one Programme while watching another

The built-in tuner allows you to record a programme that you don't want to miss while watching another programme.

Cue/Review operation

You can locate a desired section with ease as you view the playback picture at 5 times normal speed in forward or reverse direction.

Dolby Noise-Reduction System*

This VTR can be operated with Dolby NR.
Dolby NR is a noise reduction system used to reduce tape hiss noise in the audio signal considerably.

*Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Fine Editing Function

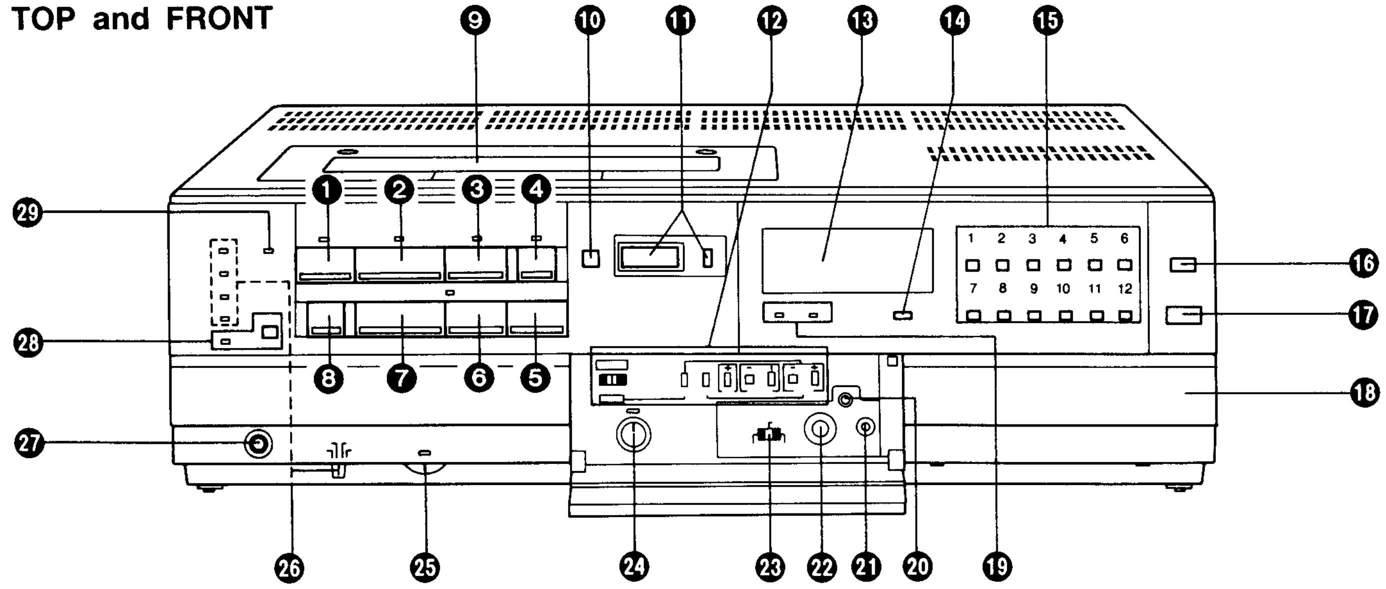
When the Pause/Still Button is pressed during recording, the tape will automatically rewind slightly to produce virtually noiseless cuts between scenes.

Auto Rewind (except for Timer Recording and OTR)

When the tape reaches its end, the tape will automatically rewind to its beginning or to the "0000" counter position if the Memory Switch is set to "ON".

CONTROLS AND COMPONENTS

TOP and FRONT



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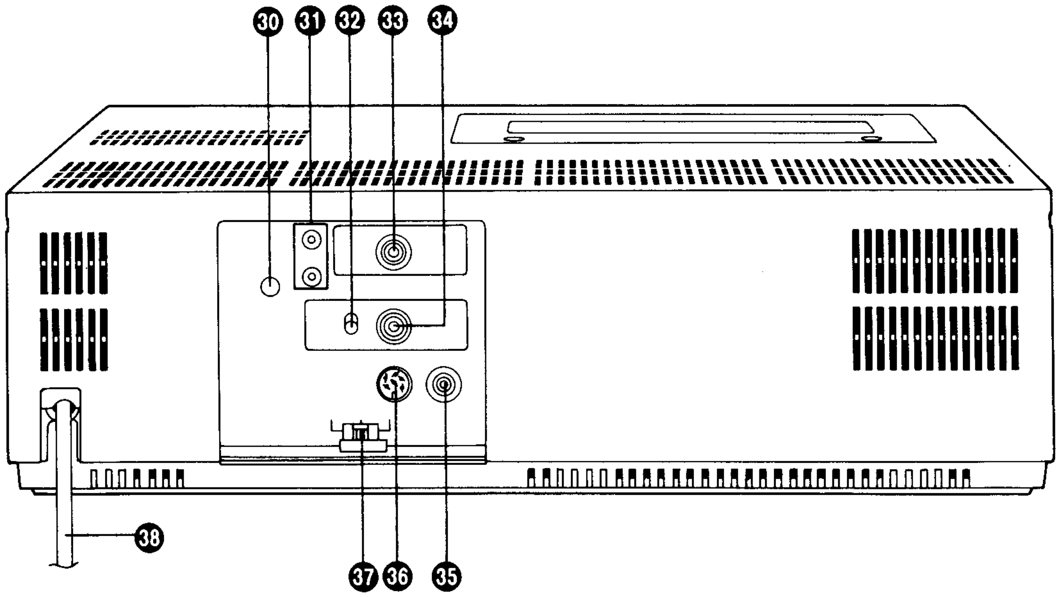

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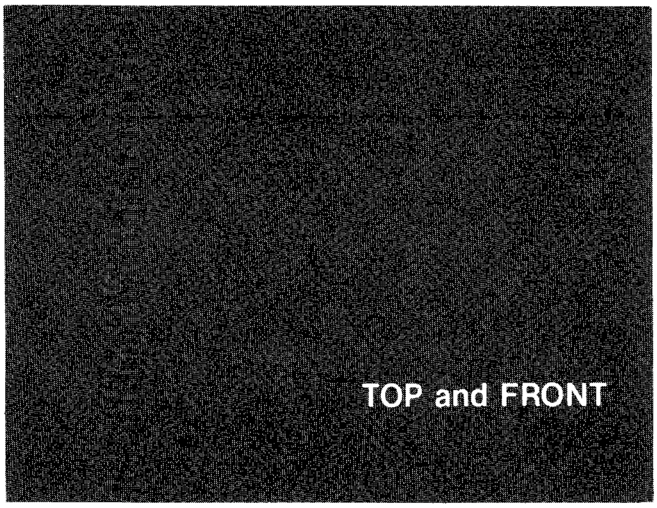


TOP and FRONT

① **Rewind/Review Button**
Press this button to rewind the tape. If this button is pressed during playback, the tape can be scanned through in reverse at 5 times normal speed. This picture search operation continues as long as this button is kept depressed.

② **Play Button**

③ **Fast Forward/Cue Button**
Press this button to move the tape forward rapidly. If this button is pressed during playback, the tape can be scanned through forward at 5 times normal speed. This picture search operation continues as long as this button is kept depressed.

④ **Record Button**
Press this button together with the PLAY Button to begin a recording.

⑤ **Still Advance Button**
Press to advance the image one frame at a time when the VTR is in the still playback mode.
When this button is kept depressed, the tape is played back at 1/6 of normal speed.

⑥ **Pause/Still Button**
Press this button to stop the tape movement temporarily during recording to leave out unwanted programme parts, or to be able to watch a still picture during playback. Press this button again, to continue the normal tape movement.

⑦ **Stop Button**

⑧ **Eject Button**
Press to raise the Cassette Holder. The power must be turned on when inserting or removing the cassette tape.

⑨ **Cassette Holder**
For insertion of a video cassette.

⑩ **Memory Switch**
When this switch is on, the tape will automatically stop rewinding just past the point where the Tape Counter ⑪ was previously set to "0000".
- The tape will not stop at this point during review playback.

⑪ **Tape Counter/Reset Button**
The counter indicates how far the tape has moved. It is very useful for locating a desired part of the tape. Press the reset button to reset the tape counter to "0000".

⑫ **Timer/Clock Controls**

⑬ **Time Display**
Indicates either the time and day or recording start/stop times for the timer recording.

⑭ **One-Touch Timer Recording (OTR) Button**
Automatic recording for 30, 60, 90 or 120 minutes is possibly by pressing this button.

⑮ **Channel Selector Buttons/Indicator Lamps**
Press the desired channel selector buttons to select the channel you wish to view or record.

⑯ **Timer Record Switch**
When this switch is set to "ON", the VTR can NOT be operated manually.

⑰ **VTR ON/OFF Switch**
With indicator lamp for turning the VTR on and off.
- The digital clock functions regardless of the setting of this switch.

⑱ **Tuner Controls**

⑲ **The displays STEREO and TWO CHANNEL**
Indicate, whether a stereo or a multiplex programme is being received.

CONTROLS AND COMPONENTS

TOP and FRONT

⑳ **Camera Remote Control Socket**
For connecting the remote control cable of a video camera (optional).

㉑ **Audio Input Socket**
For connecting an audio cable of a video camera, a component audio system or another VTR (Mono).

㉒ **Video Input Socket**
For connecting the video cable of a video camera or an output video signal of another VTR .

㉓ **Input Signal Selector**
For selecting one of three input signal sources to be recorded.

1) In the CAMERA position, the signal source connected to the Video Input Socket and the Audio Input Socket.
2) In the TUNER position, the signal from the built-in tuner is recorded.
3) In the AV position, the video and audio signals input through the AV Socket are recorded.

㉔ **Picture Sharpness Control**
With this control, the outlines of the picture can be made sharper or softer. During recording, this control does not function.

㉕ **Tracking Control**

Noisy Picture

Should tapes recorded on another machine show noise, rotate this control slowly to the left or right. The control should normally be kept in the "FIX" position.

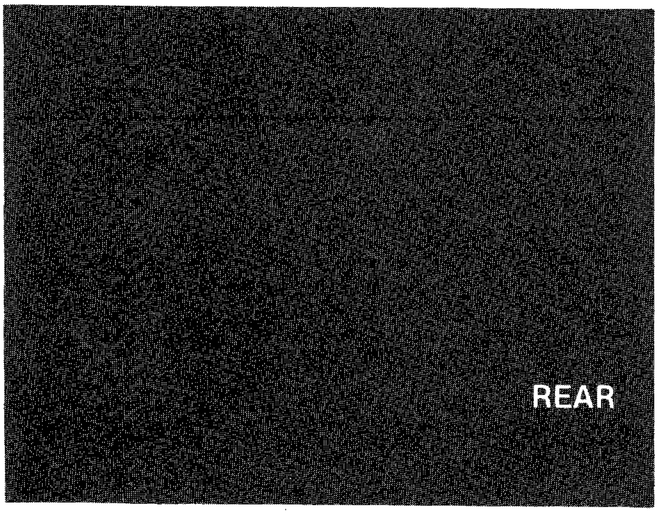
㉖ **Sound Track Selector with indicators for reception sound signal and audio output signal**

1) The sound multiplex signals among the TV signals can be forcibly turned into monaural signals. Normally, the switch is set to the "CH1+CH2" position.
   When the signals are too weak for the sound multiplex broadcast to be received properly, set the switch to the MONO position. The sound signals passing through the VTR are heard in mono. This switch has no effect with monaural broadcasts.
2) Use to select the playback sound when separate sound has been recorded on the two sound tracks.

㉗ **Remote Control Socket**
For connection of the remote controller (optional).

㉘ **Dolby NR Switch**
Press this switch to turn the Dolby Noise Reduction System ON or OFF for recording and playback.
It is recommended to use the Dolby Noise Reduction System to achieve good sound quality. However, the Dolby NR System is only then effective, if a tape has been recorded with Dolby NR and is also played back with Dolby NR. Tapes that were not recorded with Dolby NR must also be played back without Dolby NR.
Therefore, it is best to mark all tapes which you record with Dolby NR.

㉙ **Moisture Indicator Lamp**
Lights up if excessive moisture condenses inside the VTR. The VTR WILL NOT operate while this lamp is on: if this happens, leave the VTR ON, and let it remain at room temperature until the lamp goes off. The time required varies with the environment, but the moisture will disappear within a few hours.



㉚ **RF Channel Selector**
For selecting the RF output channel .

㉛ **Audio Output Sockets, CH1/L and CH2/R**
For connection to a TV monitor or another Video Cassette Recorder. Not used with an ordinary TV.

㉜ **Level Switch for Aerial Signal**
Used to attenuate the received VHF and/or UHF aerial signals.
If the reception is normal, set to "HIGH". If the signal is strong (stripe patterns appear in the upper half of the picture), set to "LOW".

㉝ **RF Output Socket**
Connect the supplied Aerial connection cable between this socket and the aerial connection socket of your TV set.

㉞ **RF Input Socket**
Connect the external aerial, which is now connected to the TV set, to this socket.

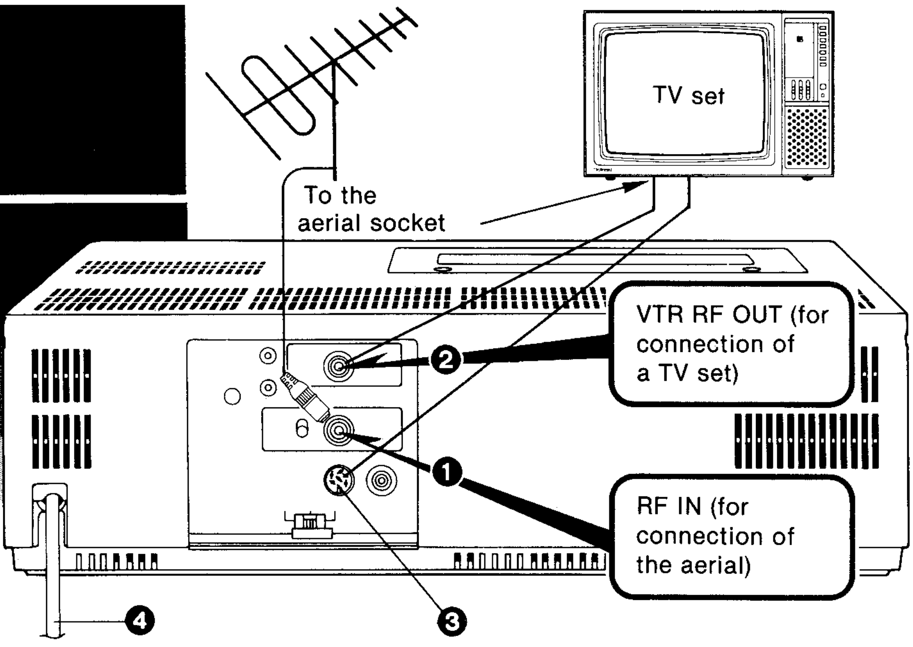
㉟ **Video Output Socket**
For connection to a TV monitor or another Video Cassette Recorder. Not used with an ordinary TV.

㊱ **AV Socket**
Central connecting socket for recording and playback of picture and sound. Connection for TV sets which are also equipped with a central AV socket. Via this socket TV programmes can be recorded, too.
Such a connection improves the picture and sound quality during playback.

㊲ **Colour Mode/Test Signal Switch**
In the TEST position, a black-and-white test pattern is generated, that allows easy tuning of your TV set to the RF output channel of the VTR. See page 11. For normal recording and playback operation, this switch must be in the middle AUTO position.
Only if the colour reception of a station is particularily weak, setting this switch to the COLOUR position can improve the recording quality.

㊳ **AC Mains Cord**

INSTALLATION, CONNECTIONS


TV set
To the aerial socket
VTR RF OUT (for connection of a TV set)
RF IN (for connection of the aerial)
❶
❷
❸
❹

Precautions for installing the VTR:

Place the VTR in horizontal position. Do not block or cover the ventilation slots on top and back of the VTR. This is important to ensure proper ventilation. Do not place the VTR near a strong magnetic field, for example near large speakers. The VTR should not be exposed to large differences in temperature and not be used in excessively humid places. This could impair the proper functioning of the VTR, the tapes and the picture quality.

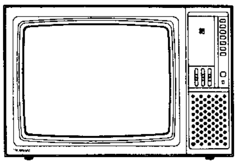
❶ **RF Input**
Connect your TV antenna to this socket.

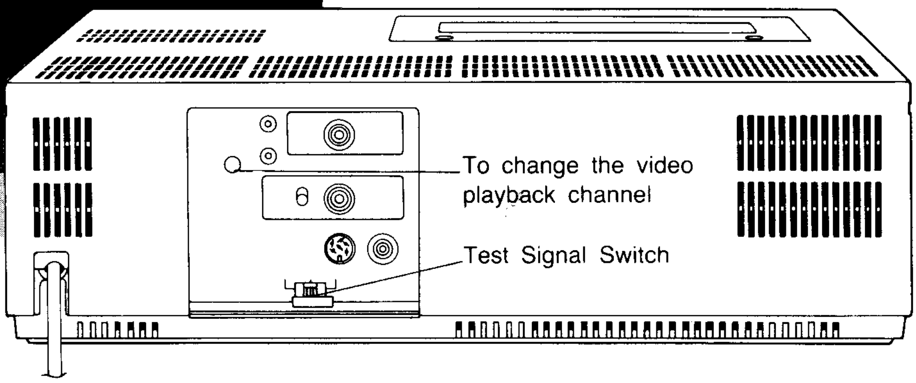
❷ **RF Output**
Connect the supplied Aerial Connection Cable with this socket and the aerial connection socket of your TV set.

❸ **AV Socket**
Central connection socket for recording and playback of picture and sound. Connection for TV sets which are also equipped with a central AV socket. Via this socket TV programmes can be recorded, too. Such a connection improves the picture and sound quality during playback.

❹ Connect the VTR to the mains.

ADJUSTING THE TV SET TO THE VIDEO PLAYBACK CHANNEL

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To change the video playback channel
Test Signal Switch

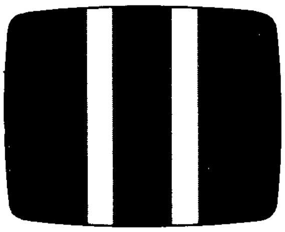
For your TV set and the VTR to be able to work together, the video playback channel (AV) on your TV set must be tuned to the output channel of the VTR in the following way:

① Turn the TV ON and select the AV programme position.

② Turn the VTR ON.

③ Set the Colour Mode/Test Signal Switch to the "TEST" position. The VTR emits a black and white test pattern on UHF channel 36.

④ Adjust the tuning on the TV set to UHF channel 36 so that the following pattern appears on the screen.



If UHF channel 36 is already occupied by a TV station in your area, the video playback channel can be changed between channel 32 and 40 on the back of the VTR by using a small screwdriver.

⑤ After the adjustment, set the Colour Mode/Test Signal Switch to "AUTO".

Note:
When Colour Mode/Test Signal Switch is in "TEST", the black and white pattern will be seen on TV. When it is in "AUTO", you can use the VTR normally. If, during recording or playback, the colour is not satisfactory, it can be stabilized by setting this switch to "COLOUR".

RECORDING AND PLAYBACK OF STEREO AND MULTIPLEX SOUND

Definition:
Stereo broadcast:
A stereo information consists of a left channel (CH1) and a right channel (CH2).

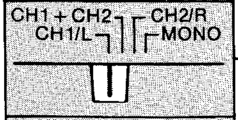
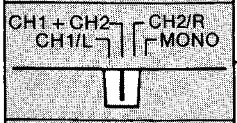
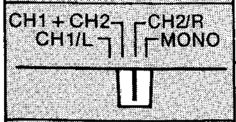
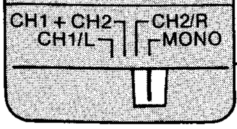
Multiplex sound broadcast:
A multiplex sound information consists of a main channel (CH1) and a sub-channel (CH2).

Mono broadcast:
Mono broadcasts use only one sound channel.

THE RECORDING AND PLAYBACK SOUND ARE SELECTED WITH THE SOUND TRACK SELECTOR ㉖.

Recording:
- Normally the Sound Track Selector ㉖ is set to position "CH1+CH2" (both for recording a multiplex and a stereo broadcast).
- Set Selector ㉖ to position "MONO" when the signals are too weak for proper recording of a multiplex or stereo broadcast. Recording/playback will then be in MONO.
- This Selector ㉖ has no effect in case of mono broadcasts.

The following table gives a quick overview over the various settings available for recording:
Note: It is recommended to use the DOLBY NR system for recording.

	Recording			Monitoring while recording		
Sound Track Selector	Bilingual Broadcast	Stereo Broadcast	Monaural Broadcast	Bilingual Broadcast	Stereo Broadcast	Monaural Broadcast
	Main	Left + Right	Mono	Main	Left	Mono
	Main + Sub	Left + Right	Mono	Main + Sub	Left + Right	Mono
	Sub	Left + Right	Mono	Sub	Right	Mono
	Main	Mono	Mono	Main	Mono	Mono

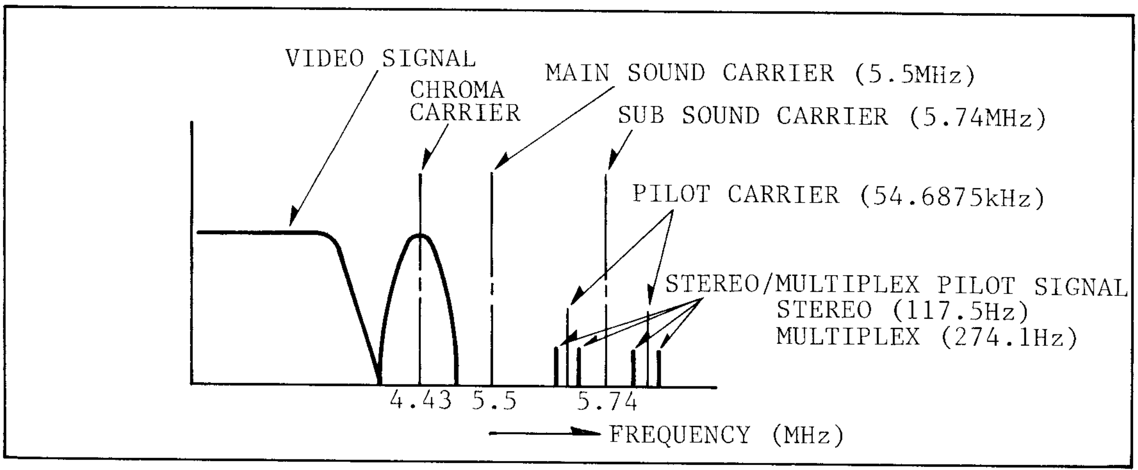
Playback:
- For playback of a stereo recording the Sound Track Selector ㉖ must be set to position "CH1+CH2".
- For playback of a multiplex recording the desired sound information must be selected with the Sound Track Selector ㉖:

Position "CH1/L": Playback of the main channel (left)
Position "CH2/R": Playback of the sub-channel (right)
- The Sound Track Selector ㉖ has no effect during playback of mono recordings.

CIRCUIT DESCRIPTION

DECODER CIRCUIT

General Description


VIDEO SIGNAL
CHROMA CARRIER
MAIN SOUND CARRIER (5.5MHz)
SUB SOUND CARRIER (5.74MHz)
PILOT CARRIER (54.6875kHz)
STEREO/MULTIPLEX PILOT SIGNAL
STEREO (117.5Hz)
MULTIPLEX (274.1Hz)
4.43
5.5
5.74
FREQUENCY (MHz)

Frequency Spectrum

Both the multiplex sound and stereo sound broadcast signals are FM modulated for the transmission, both the main (L+R) and sub (R) signals are respectively FM modulated by 5.5MHz and 5.74 MHz carriers.
There are each 54.6875kHz pilot carriers on both side bands of the sub carrier, by which 117.5kHz and 274.1kHz pilot signals for the discrimination of the stereo and multiplex broadcast are AM modulated.

The Decoder circuit separates both of the demodulated multiplex and stereo signals into the main (L) and sub (R) signals using matrix circuit. The pilot signal permits the decoder circuit to automatically identify and select any of the multiplex, stereo, and monaural modes.

1. Signal flow during the Stereo mode

The stereo sound signals respectively pass through band pass filter (BPF) where they are separated into the main (1/2 (L+R)) and sub (R) signals, which are then treated by the FM detection as was conventionally done.

Then FM-detected main (1/2 (L+R)) signal then passes through the Separation Adjustment VR R7001 before being fed to pre-amplifier Q7001. This signal then goes through buffer Q7002 and then enters IC7001 pin(15)which is one of the input terminals of the Matrix. (Note: that said pre-amplifier Q7001 switches the gain so that the gain during the stereo mode is 6dB higher than the multiplex mode.)
During the stereo mode, (-L) signal is generated by the Matrix circuit, which is then output from IC7001 pin(28).
On the other hand, the FM detected sub (R) signal is then amplified and inverted by pre-amplifier Q7003 and split into two. One goes through buffer Q7005 and then enters IC7001 pin(17)which is the other input terminal provided for the Matrix circuit. The other one is output as (-R) signal through SW1 inside IC7003 and emitter follower Q7004. Both of (-R) signal and (-L) signal generated by the Matrix circuit then respectively pass through the output level adjust VRs R7040 and R7044, then enter the 70.5μsec de-emphasis circuit which compensates for the frequency characteristics of both signals, and then both of them are eventually sent out from the (R) and (L) output terminals (P7007 pin 1, 4).

2. Signal flow during the Multiplex mode

When the Multiplex mode is entered, the internal matrix circuit of IC7001 functions as a switch, and as a result, both of the main (L+R) and sub (R) signals can be freely controlled. Since the signal flow until being fed to the matrix circuit of IC7001 is almost identical to the signal flow during the Stereo mode, its description is deleted from this section.
The only difference is found in the level of the main (L+R) signal. Comparing to the Stereo mode, the main (L+R) signal during the Multiplex mode remains in a higher level, and so there is no need to hold its gain at a 6dB higher level than the input, except said signal merely goes through pre-amplifier to properly switch the gain level. The gain switching is necessary in order to minimize variation of the matrix input level to make the separation characteristics optimum.
To achieve this, by operating SW4 inside IC7003, both ends of the bias resistor R7006 connected to the emitter of pre-amplifier Q7001 is being switched either by short-circuiting or disconnecting both of them. When the multiplex mode is entered, SW4 inside IC7003 remains OFF. Both of the main (L+R) and sub (R) signals fed to the matrix circuit of IC7001 are then subject to the mode control in this circuit which determines any of the Main/Sub/Mono/Mix modes being entered. Then, both signals are sent out from IC7001 pins(2)and(28)in response to any of the modes entered. As was done during the Stereo mode, these output signals pass through the output level adjust VRs R7040 and R7044, then enters the de-emphasis circuit where the frequency characteristics of both signals are properly compensated for, and they are eventually sent out from the output terminals in the form of the main (L+R) and sub (R) signals.

3. Flow of the Pilot signals

The pilot control signal which is being the sub signal is first amplified by pre-amplifier Q7014, then it is picked up by the 5.468kHz matching filters C7004 and L7014, and then it passes through a coupling capacitor C7005 before eventually being fed to IC7001 pin(27). The pilot signal is first amplified by the internal amplifier of IC7001, which is then sent out from IC7001 pin(26), and then goes through D7001, D7002, C7003, C7007, and R7022, which make up an AM detector, and as a result, both of the stereo (117.5Hz) and multiplex (274.1Hz) signals can be obtained. The AM detected signal is again amplified by IC7001 and then sent out from IC7001 pin(25)before eventually being fed to IC7002 pin(2)which is the pilot signal detector.
Two voltage-controlled oscillator provides the required frequencies for the PLL circuit in IC7002, and so, in responding to any of the modes entered, such frequencies can properly be locked by both of the stereo (117.5Hz) and multiplex (274.1Hz) pilot signals being fed from IC7002 pin(7). Thus, the modes being entered automatically identified, whether it is the Stereo mode, or the Multiplex mode.

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Panasonic VHS
NV-332-EG

Vol. 2

Mechanical Adjustment Procedures

Electrical Adjustment Procedures

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Tape Speed:	23.39mm/s
Record/Playback Time:	240 min. with NV-E240
FF/REW Time:	Less than 6.5 min. with NV-E240
Heads:	Video: 2 rotary heads Audio/Control: 1 stationary head Erase: 1 full track erase
Input Level:	Video: VIDEO IN connector (BNC) 1.0Vp-p, 75Ω terminate AV (ADIN45482) 1.0Vp-p, 75Ω terminated Audio: LINE IN jack (RCA) More than −20dB, more than 50kΩ (Monaral) AV (DIN45482) more than −10dB, more than 10kΩ

Output Level:	Video: VIDEO OUT connector (BNC) 1.0Vp-p, 75Ω terminate AV (DIN45482) 1.0Vp-p, 75Ω terminate Audio: LINE OUT jack (RCA) −6dB, less than 1kΩ AV (DIN45482) −6dB, less than 1kΩ RF Modulated: UHF channel 36 ± 4CH 75Ω terminate
Weight:	8.6kg
Dimensions:	430(W) × 125(H) × 358(D)mm
Accessory Supplied:	1 pc. DIN-RF Cable VJA0130
Optional Accessories:	Video cassette tape: NV-E240 Approx. 344m, 240 min. NV-E180 Approx. 258m, 180 min. NV-E120 Approx. 174m, 120 min. NV-E60 Approx. 88m, 60 min. Wired Remote Control Unit, NV-A33 Video Camera, WV-2600E, WV-3000E, WV-3200E

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CONTENTS

SPECIFICATIONS .... Cover
MECHANICAL ADJUSTMENT PROCEDURES 2- 1
 DISASSEMBLY OF CABINET PARTS 2- 1
  1. Disassembly Flowchart 2- 1
  2. Detailed Disassembly Method 2- 1
 ADJUSTMENT PROCEDURES 2- 4
  1. Position Adjustment of Cassette Guide Pin 2- 4
  2. Confirmation of Pressing Force and Position Adjustment of Pressure Roller 2- 4
  3. Confirmation of Tape Speed 2- 4
  4. Replacement of Upper Cylinder Unit 2- 5
  5. Replacement of D.D. Cylinder Unit 2- 6
  6. Adjustment of Safety Switch 2- 6
  7. Position Adjustment of Tension Post 2- 7
  8. Confirmation/Adjustment of Brake Torque 2- 8
  9. Confirmation of Takeup Torque 2- 8
  10. Measurement and Adjustment of Back Tension 2- 9
  11. Height Adjustment of Reel Tables 2-10
  12. Height Adjustment of Tape Guide Post 2-11
  13. Height Adjustment of Pull Out Post 2-12
  14. Confirmation of Envelope Output 2-13
  15. Adjustments and Confirmation of A/C Head 2-14
  16. Adjustment of Cassette Holder 2-16
  17. Adjustment of Cam Gear and Mode Select Switch 2-17
  18. Position Adjustment of Cassette Down Switch 2-19
  Servicing Fixtures & Tools 2-20

ELECTRICAL ADJUSTMENT PROCEDURES 2-21
 1. Test Equipment 2-21
 2. Adjustment Procedures 2-21
 2-1. POWER SUPPLY SECTION 2-21
 2-2. SYSTEM CONTROL SECTION 2-22
 2-3. SERVO SECTION 2-22
 2-4. VIDEO & COLOUR SECTION 2-26
 2-5. AUDIO SECTION 2-31
 2-6. TIMER SECTION 2-33
 2-7. TV DEMODULATOR SECTION 2-34
 LOCATION OF CONTROLS & TEST POINTS 2-40

MECHANICAL ADJUSTMENT PROCEDURES

DISASSEMBLY OF CABINET PARTS

1. Disassembly Flowchart

This flowchart indicates disassembly steps of the cabinet parts and the PC Boards in order to find the item(s) necessary for servicing.
When reassembling, perform the step(s) in the reverse order.

Notes:
1. When removing the Front Panel, work with care not for breaking the locking portion of the panel.
2. The adjustment is required when the Cassette Guide was replaced.

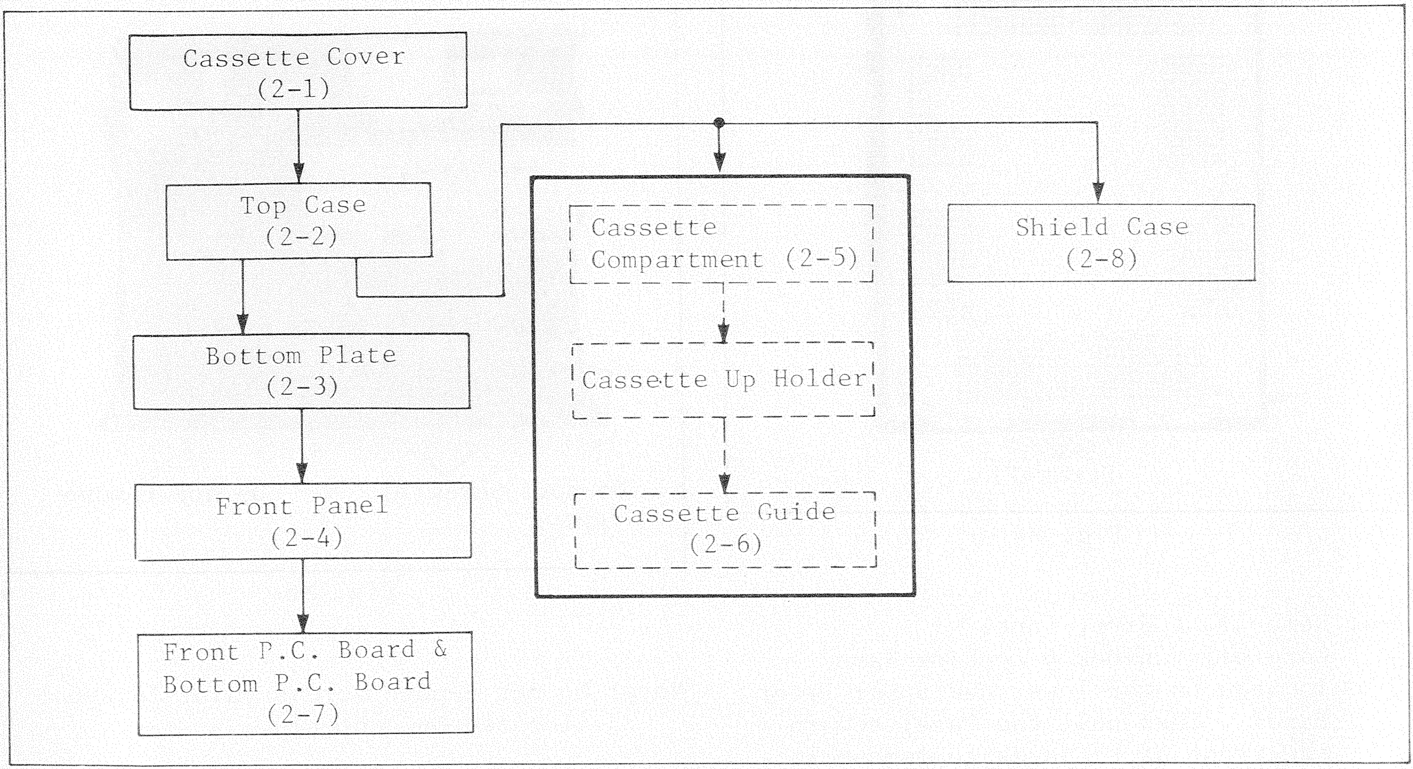

Cassette Cover (2-1)
Top Case (2-2)
Bottom Plate (2-3)
Front Panel (2-4)
Front P.C. Board & Bottom P.C. Board (2-7)
Cassette Compartment (2-5)
Cassette Up Holder
Cassette Guide (2-6)
Shield Case (2-8)

Fig. M1

2. Detailed Disassembly Method

2-1. Removal of the Cassette Cover
Remove 2 screws (A). Then lift the cassette cover.

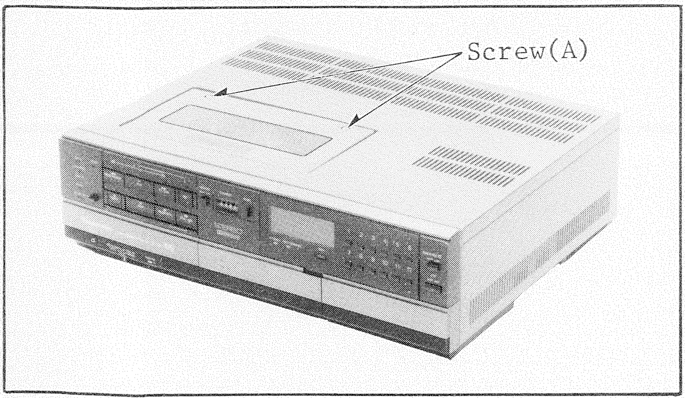


Fig. M2

2-2. Removal of the Top Case
Remove 3 screws (B). Then carefully lift the rear portion and pull it toward the rear of deck to remove.

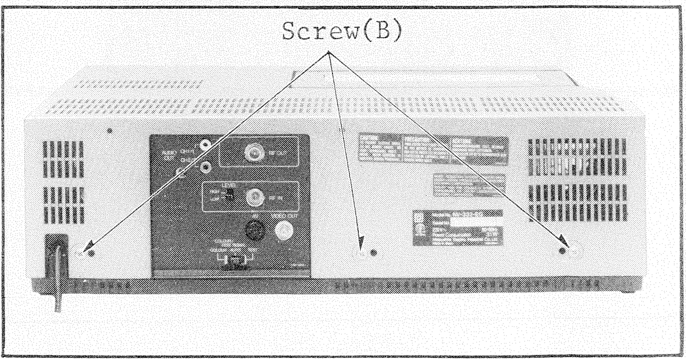


Fig. M3

2-3. Removal of the Bottom Plate
Place the deck up side down so that the bottom side faces upward. Then remove the 6 screws (F) to remove the Bottom Plate.

Note: Place the cushion under the deck for not being damaged the top portion of the deck.

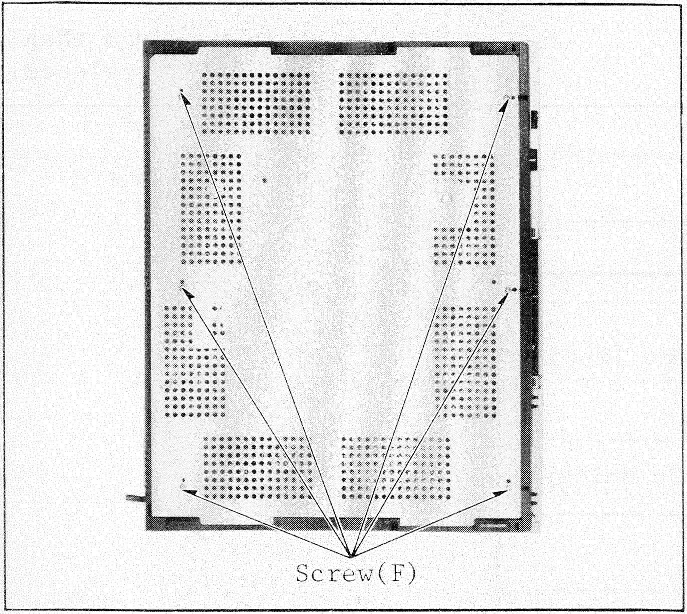


Fig. M4

2-4. Removal of Front Panel
Carefully unlock 6 Locking Tabs located on the lower and upper Front Panel. Then pull the Panel toward the front of the deck to remove it.

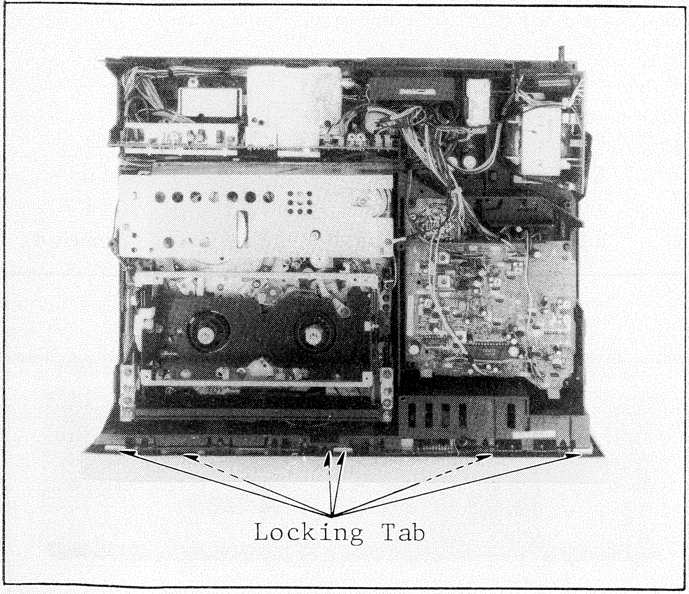


Fig. M5

2-5. Removal of the Cassette Compartment
Since the adjustment is not required when reinstalling the cassette compartment unless the screw located on center was loosened or removed, remove the entire cassette compartment for servicing or adjustments of parts under it.
Remove 4 screws (D) on each side and remove the Cassette Compartment (Cassette Up Holder and Cassette Guide).

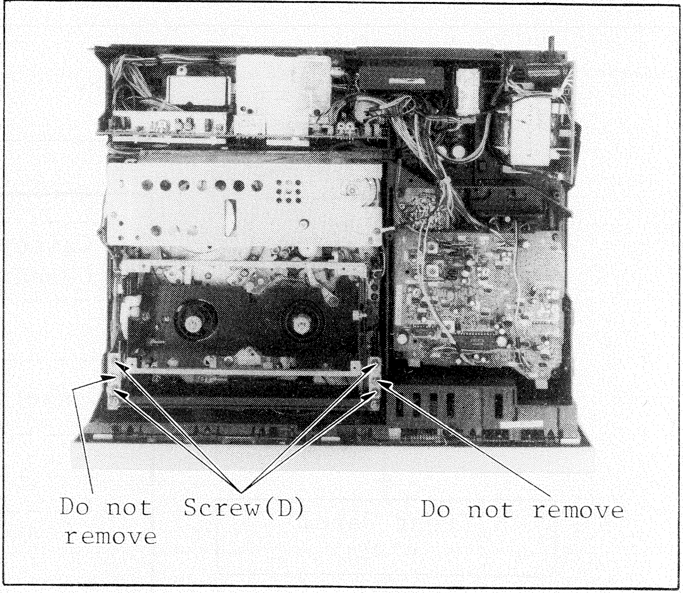


Fig. M6

Note: Do not remove screws paint locked. (located on center)

2-6. Removal of the Cassette Guide
In case only the cassette guide requires replacement or removal, remove a screw (E) on each side.

Note: When reinstalling, insert the cassette tape and ensure the clearance between tape and projections on the cassette guide is more than 1 mm.

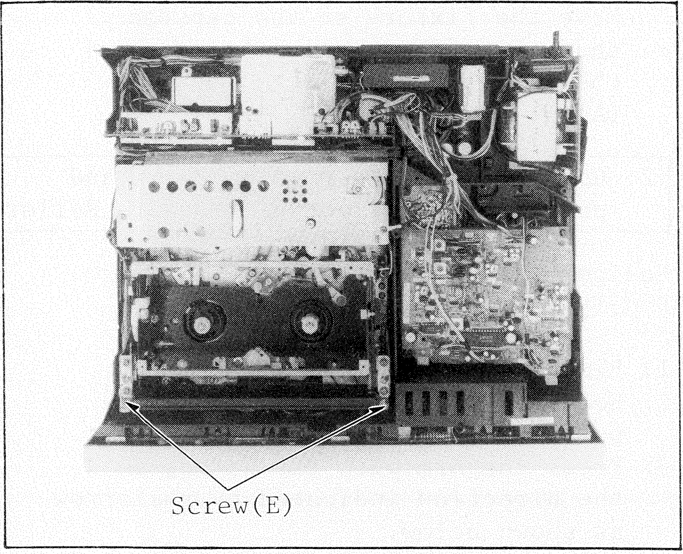


Fig. M7

2-7. Opening of the Front P.C. Boards and the Bottom P.C. Board.

1. Carefully unlock 6 Locking Tabs, then slightly lift the Front P.C. Boards to open its.

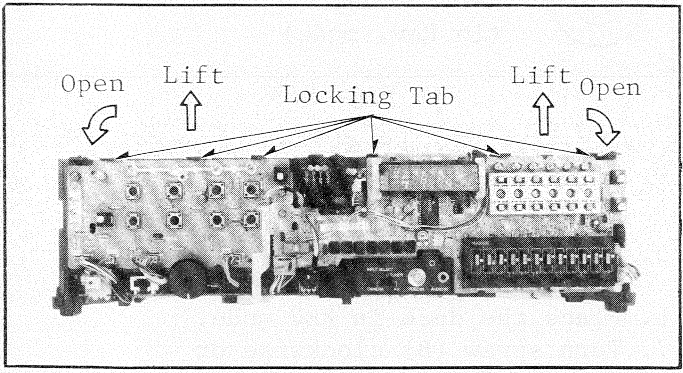

Open
Lift
Locking Tab
Lift
Open

Fig. M8

2. Place the deck up side down so that the bottom side faces upward, and remove 6 screws (G).
3. Unlock 5 Locking Tabs, then lift the Bottom P.C. Board with the Front P.C. Boards to open it.

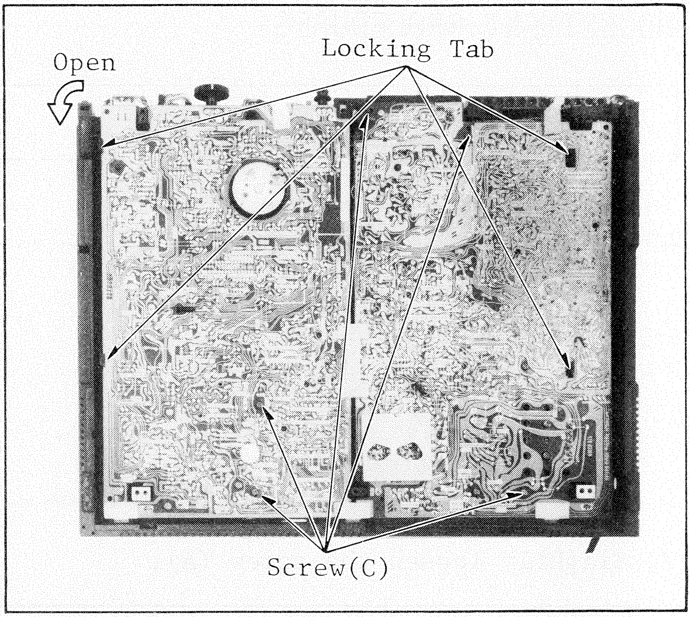

Open
Locking Tab
Screw(C)

Fig. M9

2-8. Removal of the Shield Case

Remove 2 screws (H). Lift it up to remove.

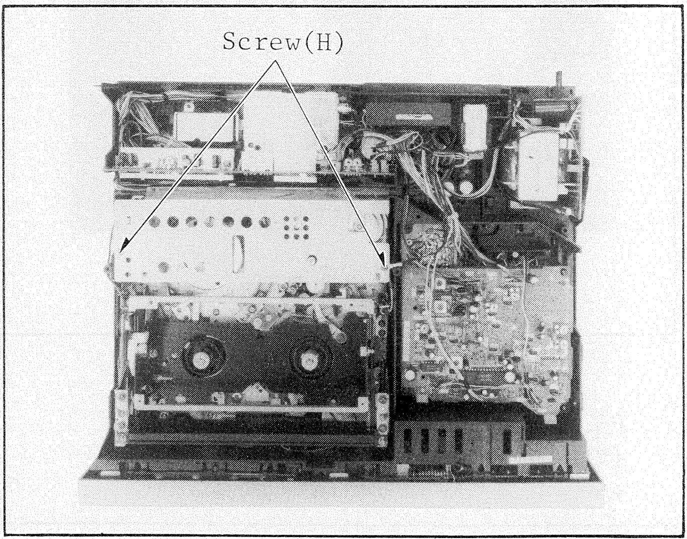


Fig. M10

ADJUSTMENT PROCEDURES

1. Position Adjustment of Cassette Guide Pin

This adjustment is required only when the cassette guide pin was replaced or it's mounting screw was loosened.

Equipment Required:
Capstan Reference Plate ... (VFK0141)

1. Remove the Cassette Cover, Top Case, Cassette Up Holder and the Shield Case. (Refer to "Disassembly Method" section.)
2. Slightly loosen the screw (A).

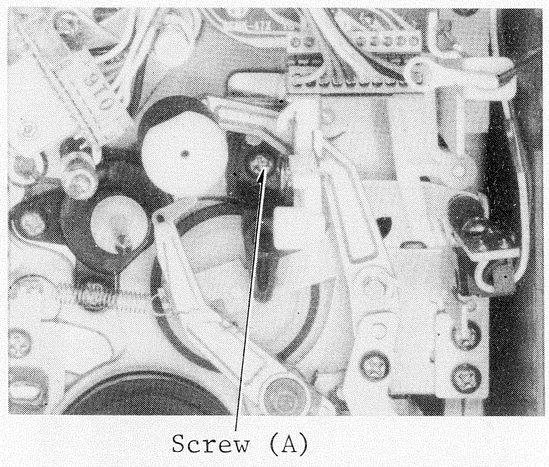


Fig. M11

Place the Capstan Reference Plate (VFK0141), set the cassette guide pin into the hole of the plate.

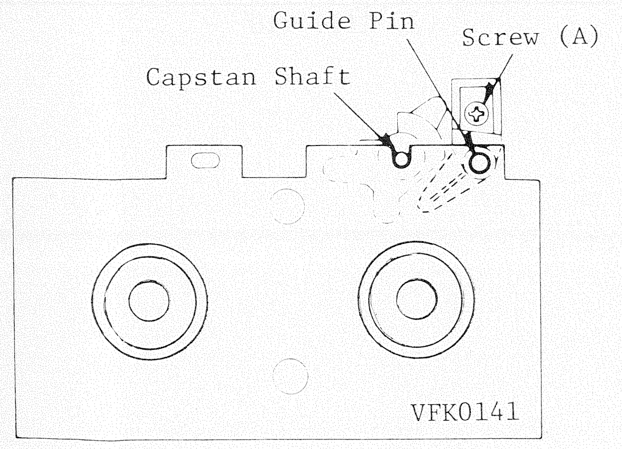


Fig. M12 Adjustment of Guide Pin

Move the fixture so the capstan shaft fits snungly in the notch of the fixture and tighten the screw (A).

2. Confirmation of Pressing Force and position adjustment of Pressure Roller

Equipment Required:
Fan-Type Tension Gauge (VFK66)

1. Playback the cassette tape.
2. Set Fan-Type Tension Gauge to the part (A) of Main Pressure Arm Unit.
3. Press the Arm with the Gauge, in the direction indicated by the arrow as shown below.

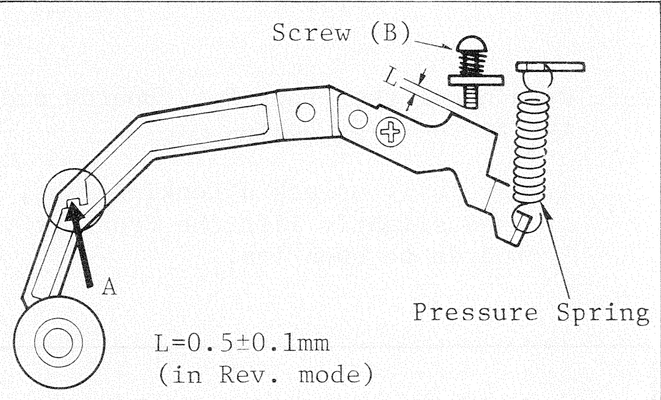


Fig. M13

4. Confirm that reading of the Tension Gauge is 1,600 ± 350 g at the moment of tape stop.
5. If it is out of spec, replace the pressure spring.
6. Place the deck in REV mode.
7. Turn screw (B) clockwise or counterclockwise by the pliers, So that the clearance (L) becomes 0.5 ±0.1mm.

3. Confirmation of Tape Speed

Equipment Required:
Frequency Counter
VHS Alignment Tape ... VFM8100H3D
Specification: 600 ± 1.5Hz

1. Remove the Bottom Case, Top Case and the Front Panel.
2. Connect the frequency counter to pin 5 of connector BJ6001 on the Servo Section.
3. Playback the monoscope portion of the alignment tape and wait until tape movement is well stabilized.

4. Read the frequency counter and confirm it is within the specification.
5. If it is out of spec., replace the capstan belt. Three types of capstan belts are available for the replacement as follows.

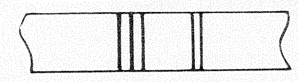
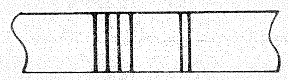
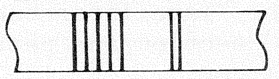
Part No.	Marking	Speed Range
VDV0121A		Slow ↑
VDV0121B		Center
VDV0121C		↓ Fast

Fig. M14 Replace the Capstan Belt

6. When to replace the Capstan Belt, first remove 2 screws (A) and Thrust Holder.
Then change the capstan belt to obtain the correct speed.
(VDV0121A, VDV0121B, VDV0121C)

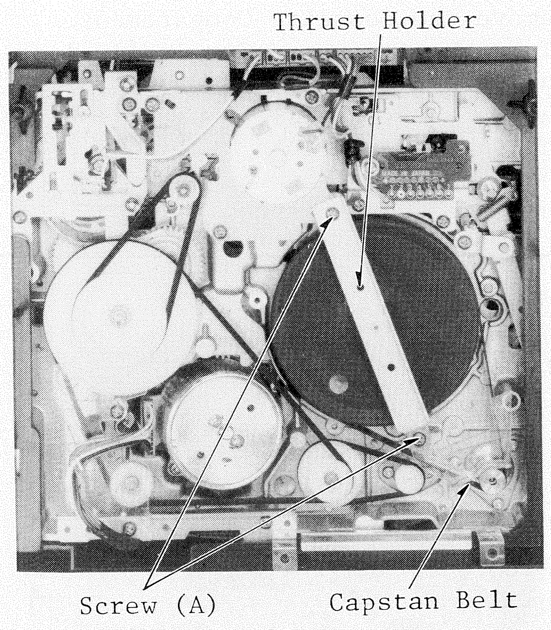


Fig. M15

Notes:
1. Do not put any oil or grease on the belts or pulleys.
2. When installing the capstan belt, make sure that the marked side comes outside.

4. Replacement of Upper Cylinder Unit

Work with extreme care when removing or replacing the upper cylinder unit. Do not touch video heads during servicing.

1. Remove Cassette Cover, Top Case and Shield Case. Refer to "Disassembly Method" section.
2. Remove the screw (A) and Discharge Brush Unit. And unsolder the 4 lead wires which are color coded to match lead wires on the head relay board.
3. Remove the 2 screws (B) and gently lift the upper cylinder unit from the shaft.
4. Before reinstalling a new one, clean the DD cylinder shaft and surface engaged with it on the upper cylinder with soft cloth dampened with freon liquid.
5. Reinstall the new one so that the colour code of 4 lead wires match the lead wires on the head relay board and tighten the 2 screws (B).
6. Resolder the 4 leads to head relay board and reinstall the Discharge Brush Unit.

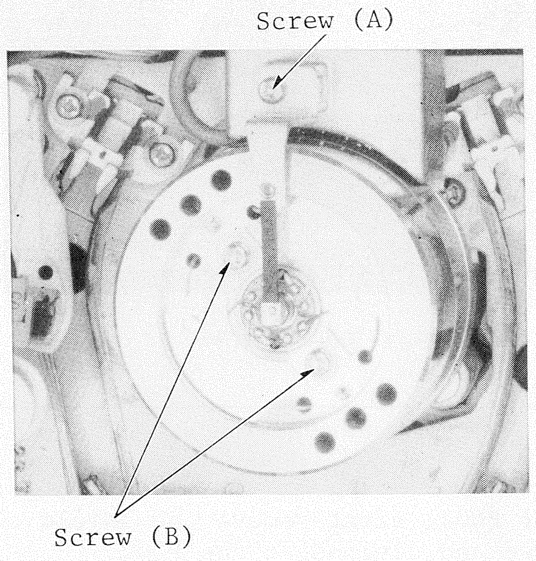


Fig. M16 Removal of Upper Cylinder

Note:

Upon completion of replacement, confirm the performance. And if any further maintenance is required, refer to the "Tape Interchangeability Adjustment" section and perform the necessary items.

5. Replacement of DD Cylinder Unit

Work with extreme care when removing or replacing the DD cylinder unit. Do not touch video heads during servicing.

1. Remove the Bottom Plate, Cassette Cover, Top Case, Front Panel and Shield Case. Then open the Bottom P.C. Board. Refer to "Disassembly Method" section.
2. Disconnect 2 connectors (P001 and P002) and remove the DD cylinder unit by removing 3 screws (A). Since there is very little clearance between DD cylinder and chassis, remove the cylinder gently and carefully.

   The P001 is connected to the Servo Section and the P002 is connected to the Video Section.

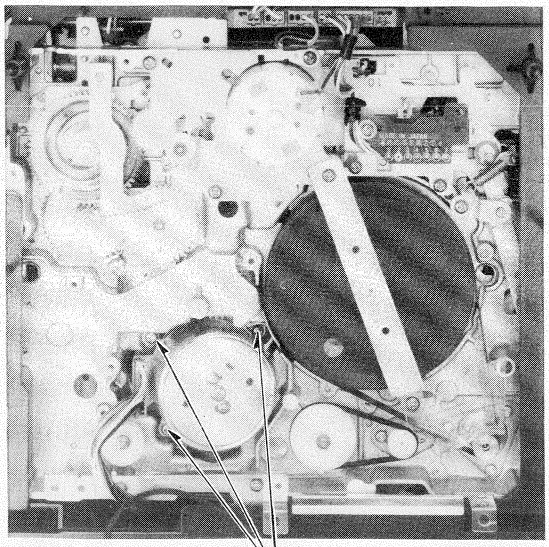


Fig. M17 Removal of DD Cylinder

For P002, first remove the shield case and disconnect the P002.

Note:

Pay particular attention to how these wires are routed along the chassis so that proper lead dress can be restored when the DD cylinder is reinstalled.

3. Remove the upper cylinder unit from the DD cylinder and reinstall it on new one. To perform this step, refer to "REPLACEMENT OF UPPER CYLINDER UNIT" section.
4. Reinstall the new DD cylinder unit to the chassis and restore the leads, connect the P001 and P002, and recover the shield case.

Note:

Upon completion of replacement, confirm the performance. And if any further maintenance is required, refer to the "Tape Interchangeability Adjustment" section and perform the necessary items.

6. Adjustment of Safety Switch

* Specification

When the cassette tape with tab is used, switch turns on and without tab switch is kept off.

* Equipment Required:

Cassette Holder Fixture (VFK0188)

1. Remove the Cassette Compartment.
2. Place the fixture and slightly loosen the screw (A).
3. Turn the switch base counterclockwise and then slowly turn it clockwise until the switch turns on (it clicks). Then tighten the screw (A).

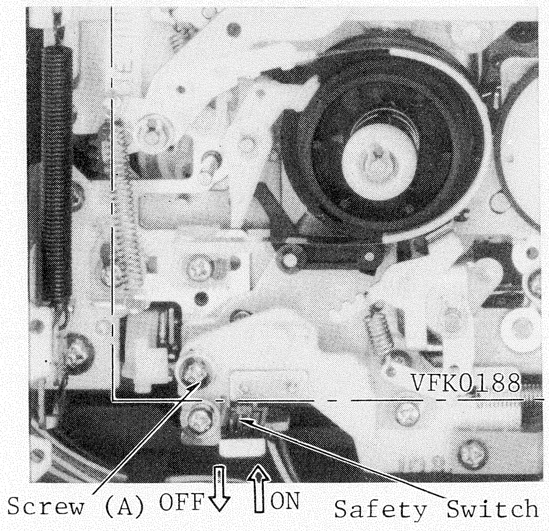


Fig. M18

4. After the adjustment, confirm that the switch turns on by using tape with tab and off without tab.

Note:
The alignment tape can be used for the confirmation by covering the broken tab.
After the confirmation, ensure the cover is removed.

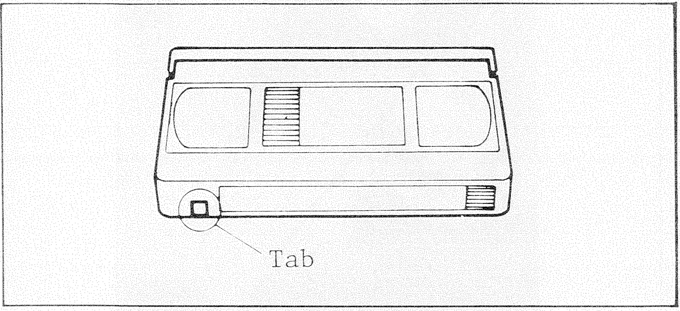


Fig. M19

7. Position Adjustment of Tension Post

* Equipment Required:
Tension Post Adjustment Plate .... (VFK0187)
Fine Adjustment Screwdriver .... (VFK0136)

1. Remove the top case and cassette compartment.
2. Blind the supply photo transistor and the take up photo transistor with opaque paper and press the cassette lock lever down to simulate the condition cassette tape is lowered.
3. Turn power switch on and push the play button for loading. As soon as the loading is completed, take out the AC plug.
4. Place the adjustment plate and slightly loosen a screw securing the tension band braket.
5. Insert the fine adjustment screwdriver into the hole and move the tension band bracket in either of direction so the tension post just touches the fixture.

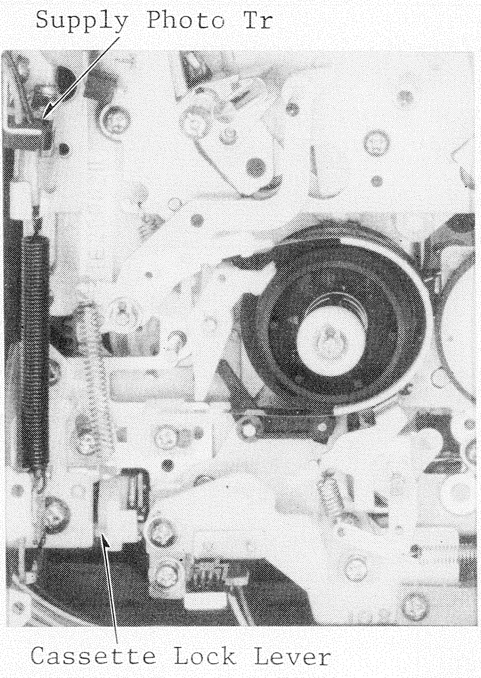


Fig. M20

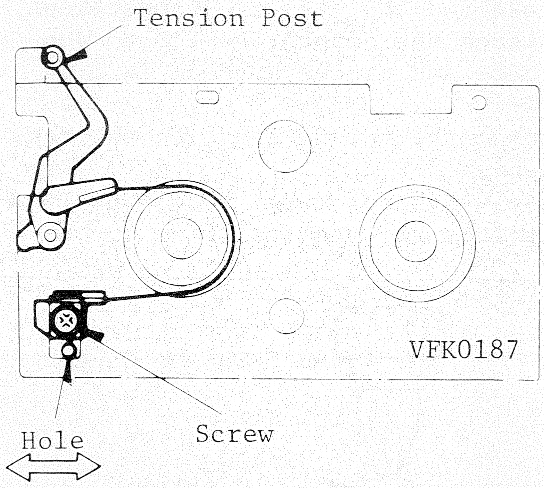


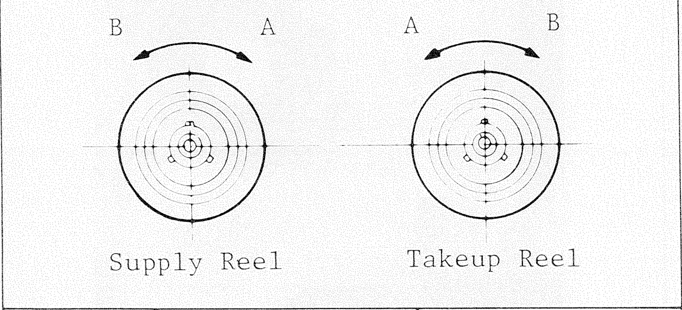
Fig. M21 Adjustment of Tension Post

6. After above the adjustment is completed, ensure the cassette lock lever is unlatched before reinstalling the cassette compartment.

8. Confirmation/Adjustment of Brake Torque

A. Confirmation Procedure
Equipment Required:
Torque Gauge ..... (VFK0133)
Adaptor for Gauge ... (VFK0134)

Spec.



	A	B
Takeup	450 ∿ 800 g-cm	70 ∿ 150 g-cm
Supply		

Fig. M22 Spec. of Brake Torque

1. Remove the cassette cover, the top case and the cassette compartment.
2. Attach the adaptor to the torque gauge and place the deck in STOP mode.
3. Place the torque gauge on the reel table. The weight of gauge should be free against the reel table.

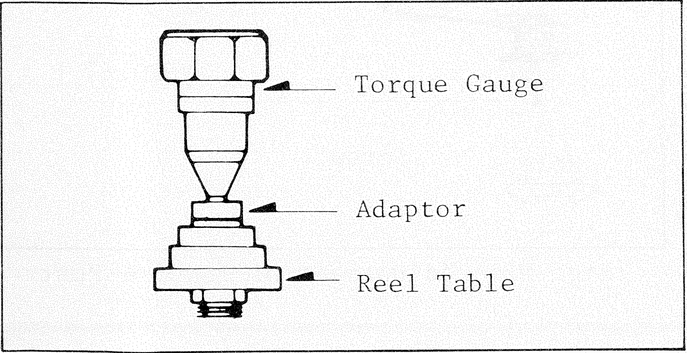


Fig. M23 Measuring Method

4. Turn torque gauge in the direction indicated in the Fig. M17 until the brake begins slipping.

B. Adjustment Procedure
To adjust the brake torque, change the notch.

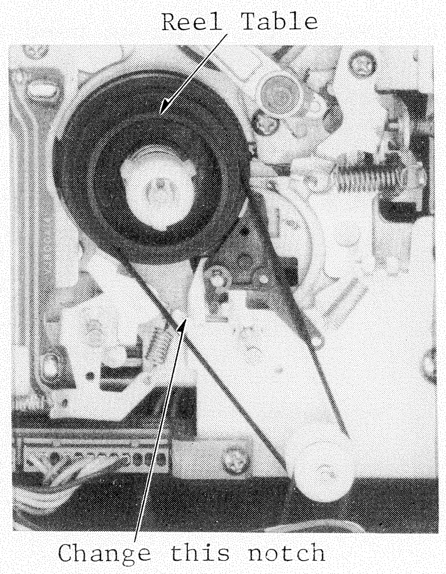


Fig. M24

Note:
If proper brake torque could not obtained by changing the spring position, clean the rotating surface of the reel table with soft cloth and confirm torque before replace it.

9. Confirmation of Takeup Torque

* Equipment Required:
Dial Torque Gauge ... (VFK0133)
Adaptor for Gauge ... (VFK0134)
* Specification
in PLAY mode ... 130 ∿ 180 g-cm
in F.F. .... more than 400 g-cm
in REW .... more than 400 g-cm

1. Remove the top case and cassette cover.
2. Attach the adaptor to the torque gauge and blind the takeup and supply photo transistors with opaque paper. Lower the cassette up unit and turn power switch on.
3. Set a torque gauge to the Take-up Reel Table, push the play button and read torque on gauge. Also perform for F.F. mode by pushing the F.F. button.

Note:

While measuring, the weight of gauge should not rest on reel table.

4. Set the torque gauge to the Supply Reel Table, press the rewind button for rewind mode. And read the torque on gauge.
5. Remove the opaque paper.

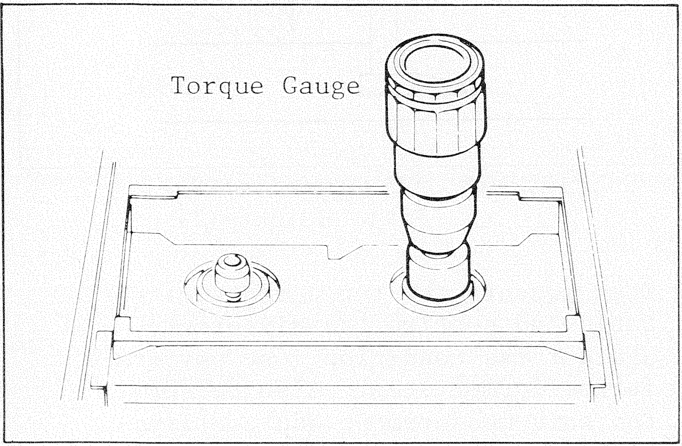


Fig. M25 Measuring Method

Note:

There are no-adjustment here.
If the torque readings are off considerably, rollers or idlers or reel tables may need replacement.

10. Measurement and Adjustment of Back Tension

A. Measurement Procedure

* Equipment Required:
Back Tension Meter (Tentelometer)
VHS Cassette Tape (120 minutes tape)

* Specification: 25 ∿ 30 g

1. Pull the erase head in the direction indicated by the arrow and hold it by adhesive tape.
2. Play back the cassette tape from its beginning and wait until tape running has stabilized. (for approx. 10 to 20 seconds)
3. Insert tension meter in tape path and confirm reading.

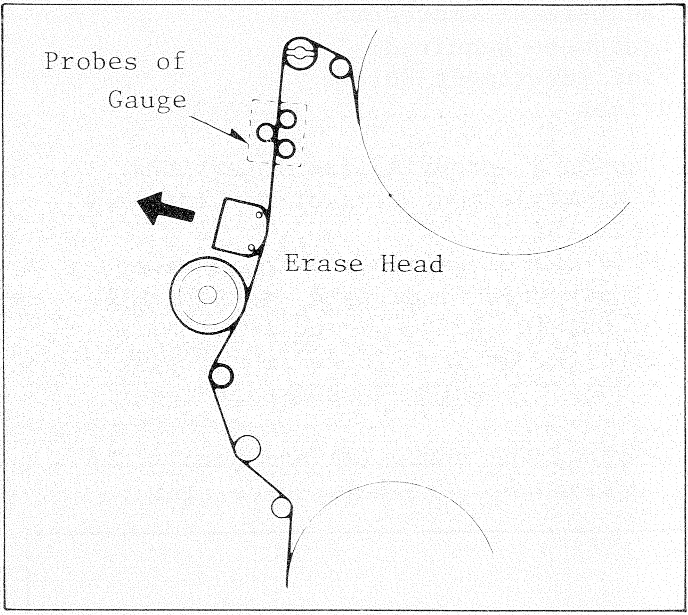


Fig. M26 Measurement of Back Tension

Notes:

1. Make sure that the three probes of the meter are all in good contact with tape, but out of contact with supply inertia roller while measuring.
2. It is recommended to be measured three times as tension meter is very sensitive.

(Adjustment Procedure of this section described on next page.)

B. Adjustment Procedure

* Equipment Required:
Fine Adjustment Screwdriver .... (VFK0136)

1. Loosen a screw (A) and insert the fine adjustment screwdriver into the hole (B).
2. Move the adjustment plate in either of direction indicated by the arrow to obtain the specified tension. Turn the driver clockwise to raise tension, counterclockwise to lower it.
3. Tighten the screw (A) and verify the tension with the meter once again.

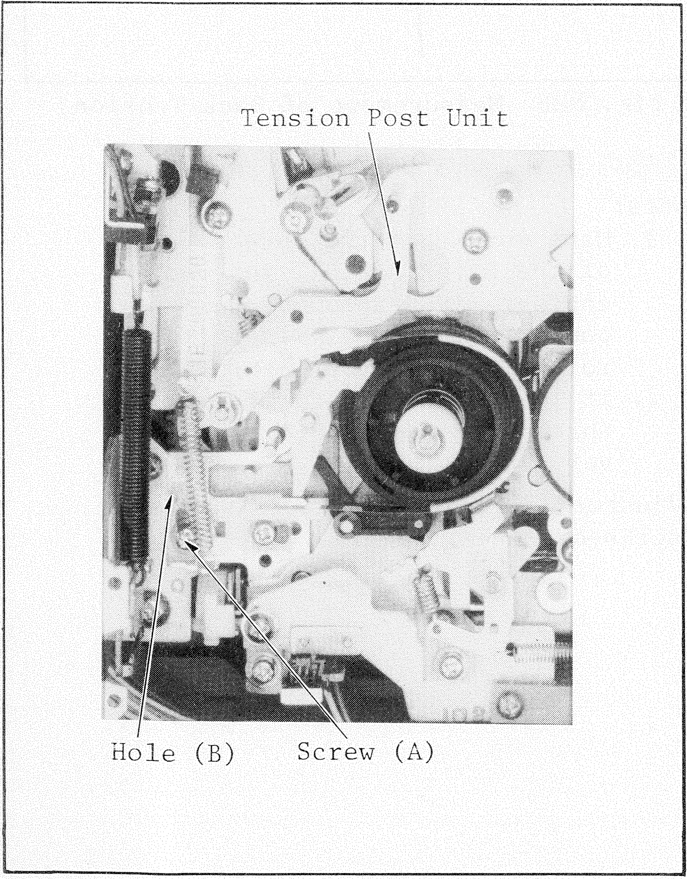


Fig. M27

4. After above the adjustment is completed, remove the adhesive tape.

11. Height Adjustment of Reel Tables

* Equipment Required:
Post Adjustment Plate .. (VFK0191)
Reel Table Height Fixture .... (VFK0190)
* Specification .... 0 ~ 0.2mm

1. Remove the Cassette Compartment.
2. Place the post adjustment plate, put the dial gauge on it and set the dial gauge to zero "0" with the condition that scraper of gauge touches the cut-out portion of the plate.

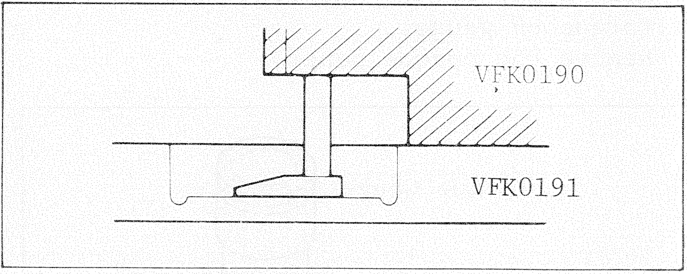


Fig. M28 Adjustment of Reel Table Height-(1)

3. Then measure the top portion of reel table and confirm the difference against the condition just performed in the former step. Also perform the same measurement and confirmation for other reel table.

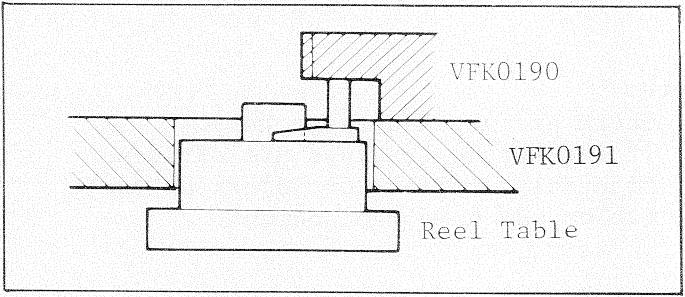


Fig. M29 Adjustment of Reel Table Height-(2)

4. If the difference is more than 0.1mm (high or lower), adjust the height of reel table to obtain the specified height.
5. For the adjustment, change the polyslider washer located under the reel table. The washers of following thicknesses are available.

Washer Thickness	Part No.
0.13mm	XWXV3Z6
0.25mm	XWXV3A6
0.5mm	XWXV3D6

Fig. M30

12. Height Adjustment of Tape Guide Post

* Equipment Required:

Hex. Wrench, (0.9mm)	(VFK0146)
Post Adjustment Plate	(VFK0191)
Reel Table Height Fixture	(VFK0190)
Nut Driver	(Purchase locally)
Post Adjustment Screwdriver	(VFK0137)

1. Remove the cassette compartment and place the adjustment plate.

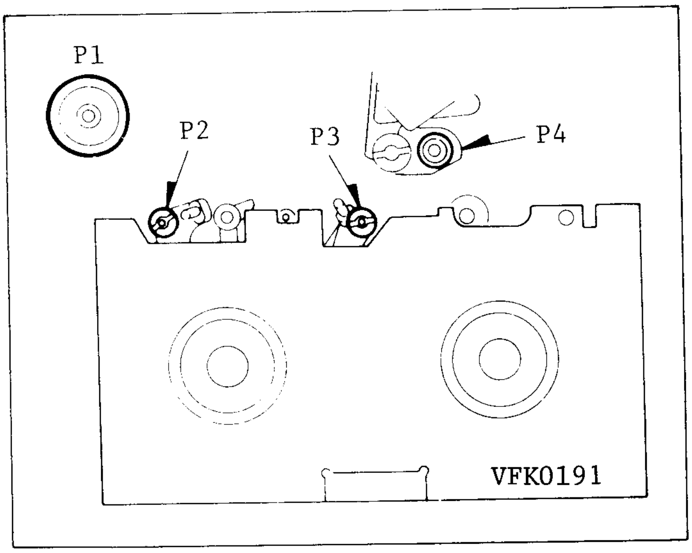


Fig. M31

2. First lower all posts so the condition of height becomes as shown. (Lower end of post, tape guide, should be lower than scraper.) Loosen a hex. screw located lower portion of posts (P2 & P3), then turn them.

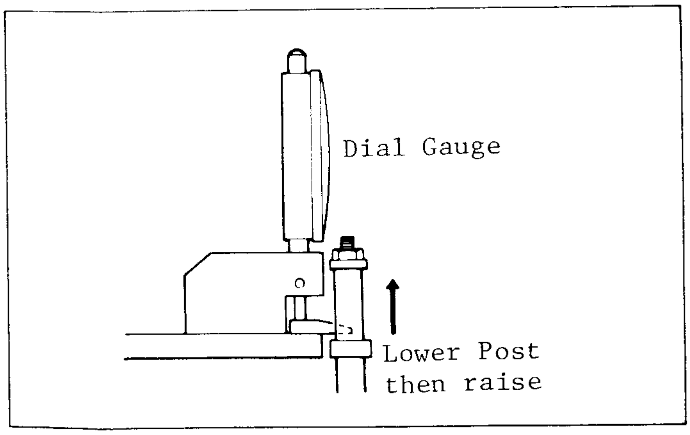


Fig. M32-A

3. Place the dial gauge on the adjustment plate and fit the scraper to the post. The condition to fit the scraper should be as shown. (The scraper of gauge should be fully lowered till it touches the plate).

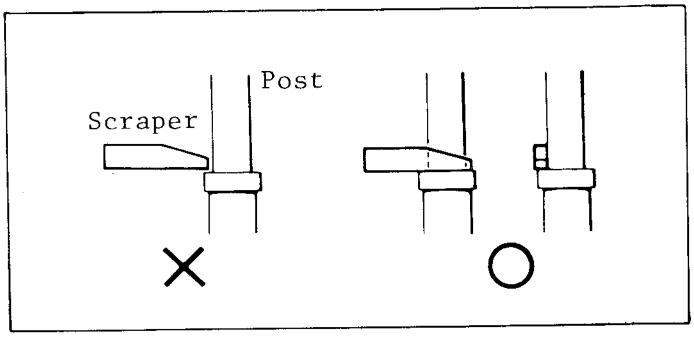


Fig. M32-B

4. Set the dial gauge to zero "0", and slowly raise the post until just the post is raised to touch the scraper. To adjust P1 and P4, use the nut driver.
   (The post cap on P4 can be removed by turning counterclockwise.)
   To adjust P2 and P3, use the post adjustment screwdriver.

Note:

Upon completion of adjustment, tighten hex. screws on the P2 and P3 also install the post cap on Post 4.

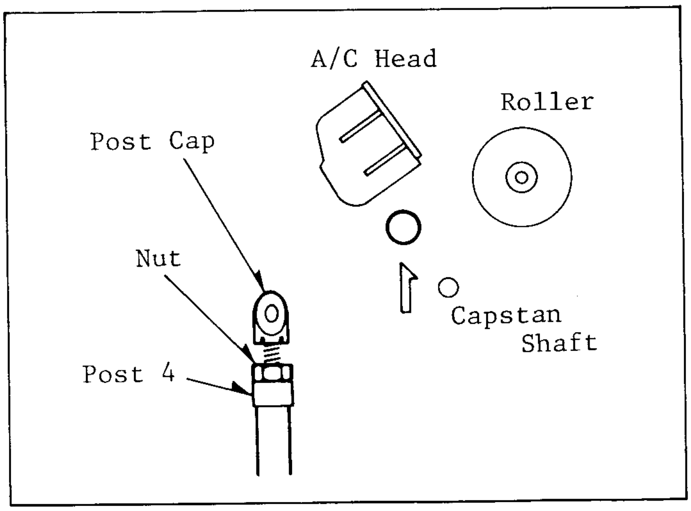


Fig. M33 Installation of Post Cap

After above the adjustment is completed, tighten hex. screws on the P2 and P3.

13. HEIGHT ADJUSTMENT OF PULL OUT POST

Notes:

1. The adjustment should be performed after the adjustment of P4 as the spec is based on height of P4.
2. The adjustment should be performed in the loading completion mode.
3. Unless the replacement or adjustment of this post is required the adjustment nut should not be turned.

* Equipment Required

Post Adjustment Plate	(VFK0191)
Reel Table Height Fixture	(VFK0190)
Nut Driver	(Purchase Locally)

* Specification .... 0.01±0.01mm

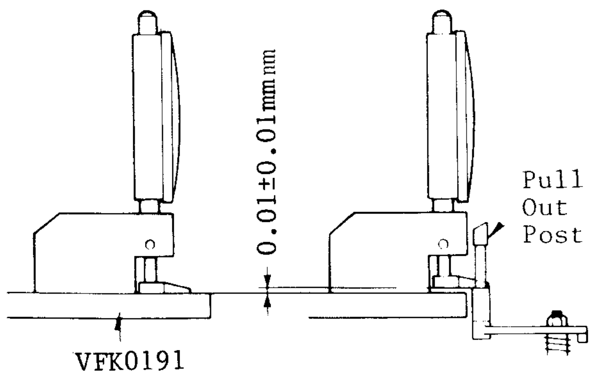


Fig. M34.

1. Remove Top Case, Bottom Plate, Front Panel and the cassette compartment.
2. Turn power switch on, insert a cassette tape and push the play button for loading.
3. As soon as loading is completed plug off.
4. Place the adjustment plate, put the height fixture on the plate and set dial gauge to zero "0" with condition the scraper touches on the plate.

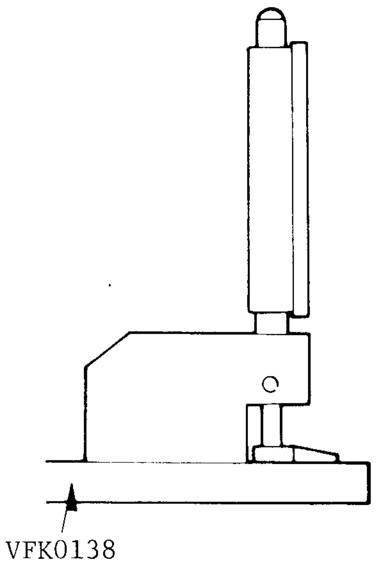


Fig. M35.

5. First, slightly lower the post by turning the nut clockwise. Fit the scraper to the post so the condition becomes as shown.

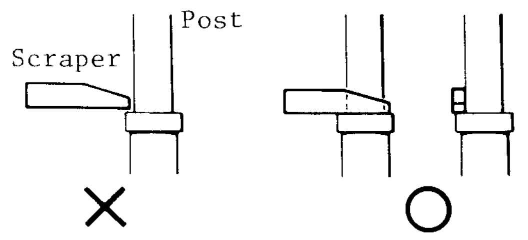


Fig. M36.

6. Then slowly and slightly turn the nut till the gauge reads specified
7. Plug in for unloading before reinstall the cassette compartment.

14. Confirmation of Envelope Output

* Equipment Required
Alignment Tape ..... (VFM8100H3D)
Post Adjustment
Screwdriver .... (VFK0137)

1. Set the tracking control into the detent (fixed) position. And connect the oscilloscope to the TP3012.

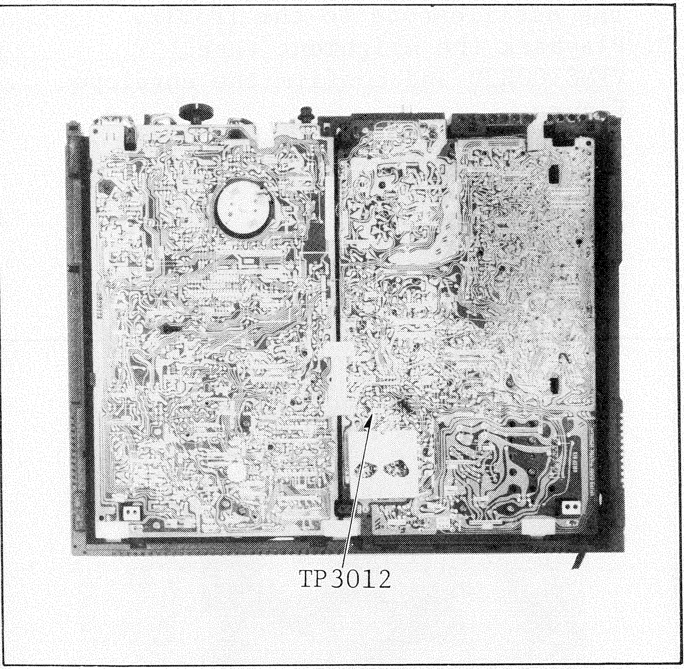


Fig. M37

2. Play back the monoscope portion of the alignment tape VFM8100H3D, adjust posts P2 and P3 by watching the scope desplay (Envelope of TP3509 on Main PC Board) so the RF envelope on the scope becomes as flat as possible. (V1/V-max. ≥ 0.7, V2/V-max. ≥ 0.8)

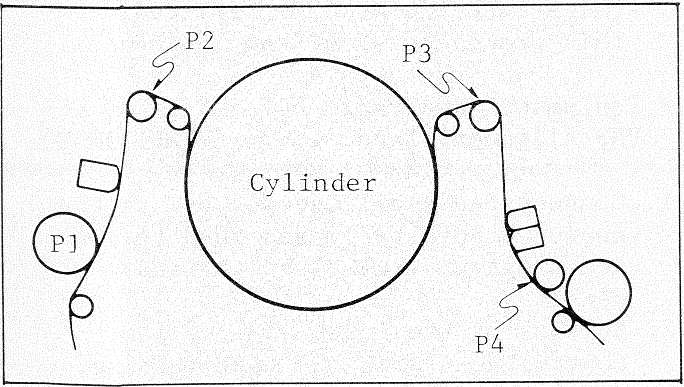


Fig. M38

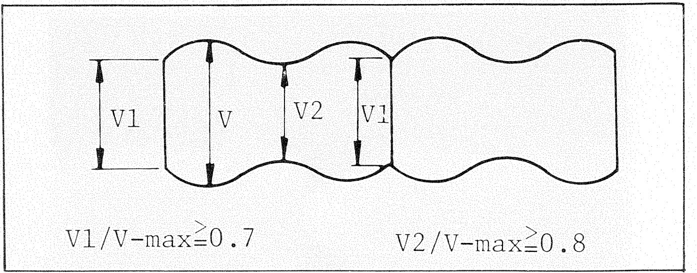
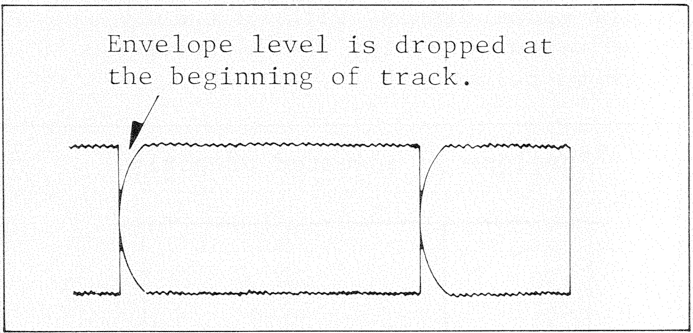


Fig. M39

3. When the scope display is as follows, adjust the height of P2 as shown below.



Envelope level is dropped at the beginning of track.

Fig. M40-(a)

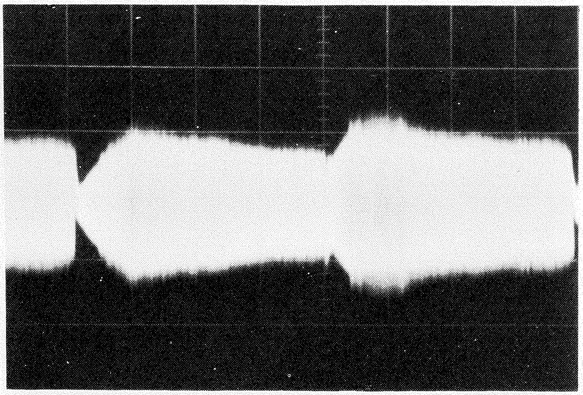
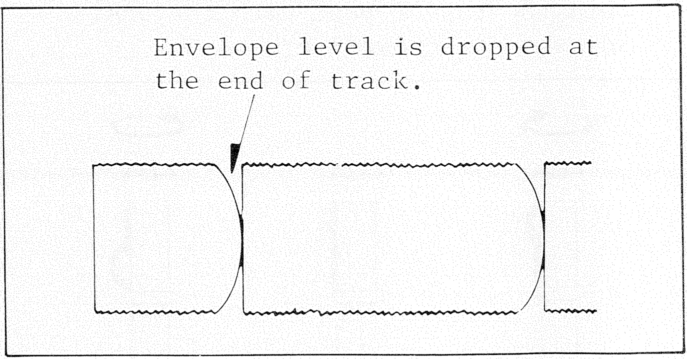


Fig. M40-(b)

4. When the scope display is as follows, adjust the height of P3 shown below.



Envelope level is dropped at the end of track.

Fig. M41-(a)

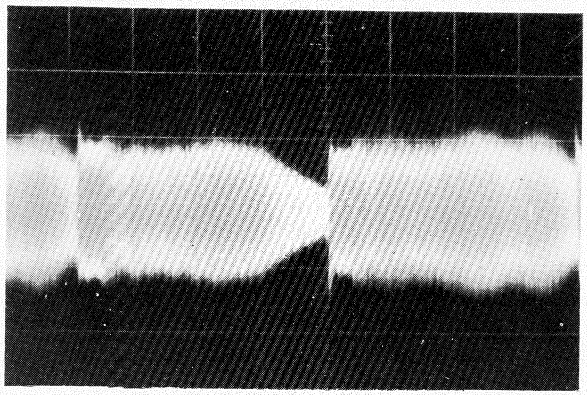


Fig. M41-(b)

5. The scope display with P2 and P3 adjusted correctly should become as shown below.

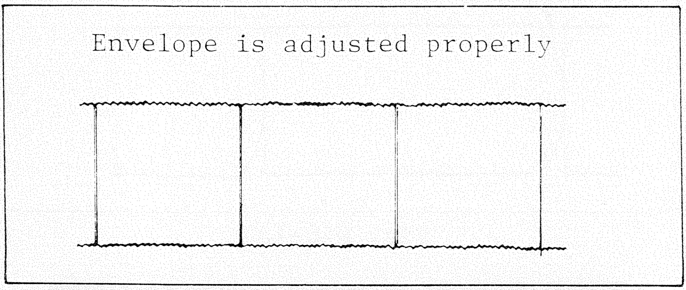


Fig. M42-(a)

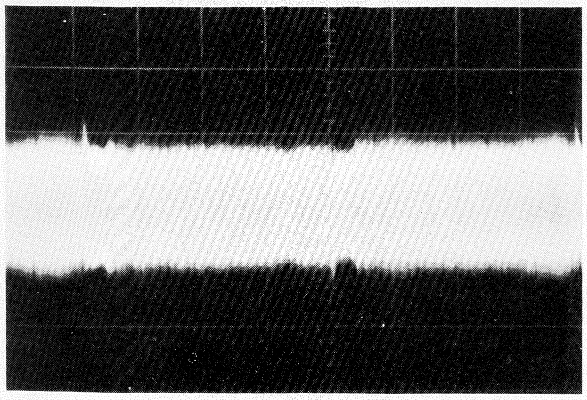


Fig. M42-(b)

6. When the adjustment is required, turn the top of post with the post adjustment screwdriver.

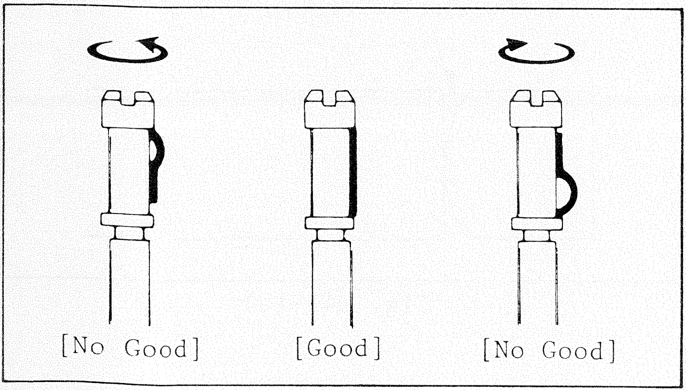


Fig. M43

15. Adjustments and Confirmations of A/C Head

15-1. Horizontal Position Adjustment of A/C Head

* Equipment Required:
H-Position Adjustment Screwdriver .... (VFK0189)

1. Set the tracking control into the detent (fixed) position. And connect the oscilloscope to the TP3012.
2. Playback the alignment tape VFM8100H3D and confirm the envelope figure.
3. If the adjustment is required, set the H-position adjustment screwdriver into the slot of the adjustment nut and rotate in either of direction to obtain maximum envelope output.

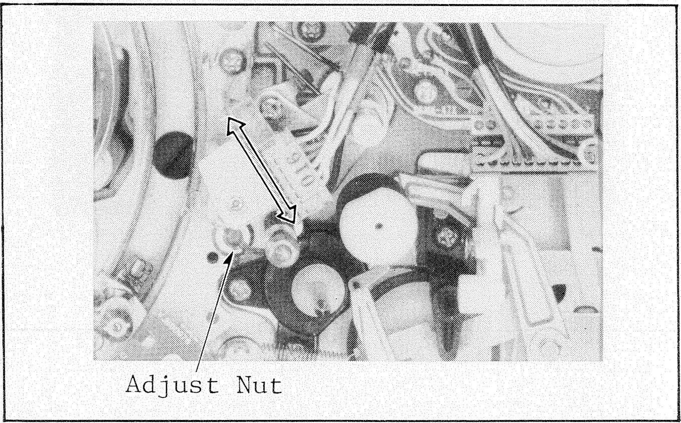


Fig. M44

15-2. Confirmation and Adjustment of A/C Head Height

A. Confirmation and Adjustment - (1)

Note:
Unless the A/C Head is replaced, this procedure should not be done.

* Equipment Required:
VHS Alignment Tape ...... (VFM8100H3D)

1. Connect the oscilloscope CH-1 to the Audio Output (Left) and CH-2 to the Audio Output (Right) on the rear panel.
2. Looking at the lower edge of the control head with the tape running, ensure the lower edge of tape runs along the lower edge of the control head.

3. If it doesn't, just slightly turn the nut (A) in either directions to correct it.
   Turn clockwise to lower the head and counterclockwise to raise it.
4. Make sure that the both audio out levels are maximum at the Audio Outputs on the rear panel.

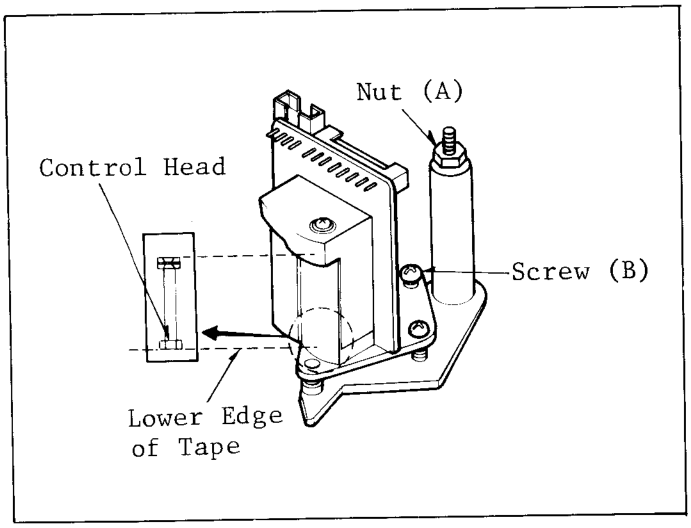

Nut (A)
Control Head
Screw (B)
Lower Edge of Tape

Fig. M45.

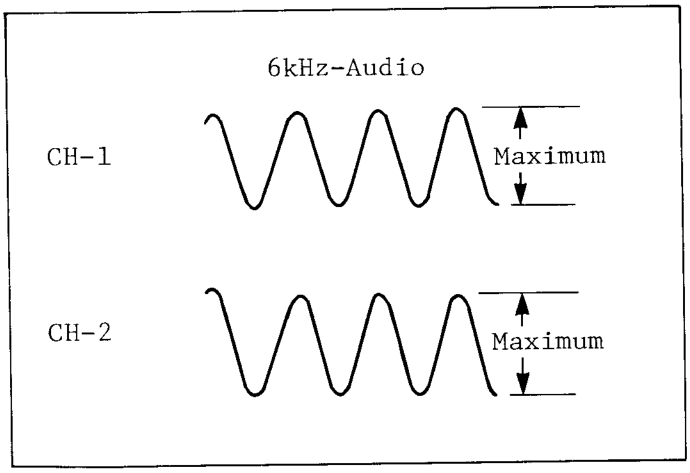

6kHz-Audio
CH-1
Maximum
CH-2
Maximum

Fig. M46.

B. Confirmation - (2)

Note:
Unless the Post-4 is pre-adjusted, this procedure should not be done. (Refer to the section of "HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS").

* Equipment Required:
Hex. Wrench, (1.5 mm) ... (VFK76)
Playback the tape and confirm the tape runs between lower and top limiters of the post. If the lower edge or top edge of the tape turns with waving or frilling, then correct the tilt of the A/C Head by turning screw (B) indicated in Fig. M45.

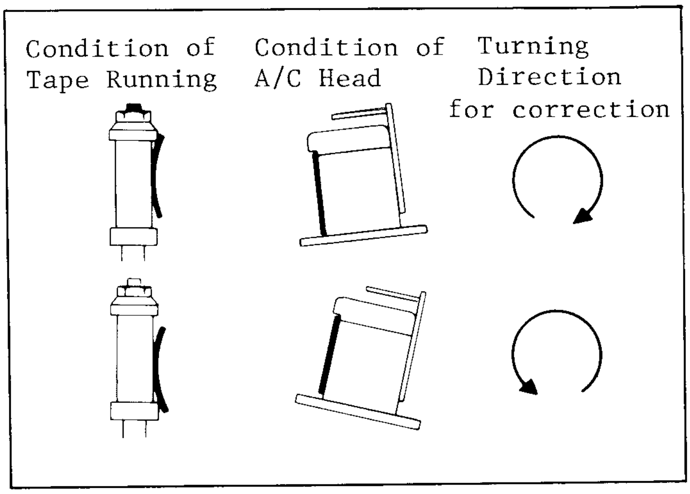

Condition of Tape Running
Condition of A/C Head
Turning Direction for correction

Fig. M47.

12-2. Audio 2CH Azimuth Adjustment

* Equipment Required:
VHS Alignment Tape ..... (VFM8100H3D)
Hex. Wrench (1.5 mm) ... (VFK76)

1. Connect the oscilloscope CH-1 to the Audio Output (Left) and CH-2 to the Audio Output (Right) on the rear panel.
2. Playback the alignment Tape, VFM8100H3D .
3. Adjust the Screw (C) so that the phases of the both channels are matched as shown .

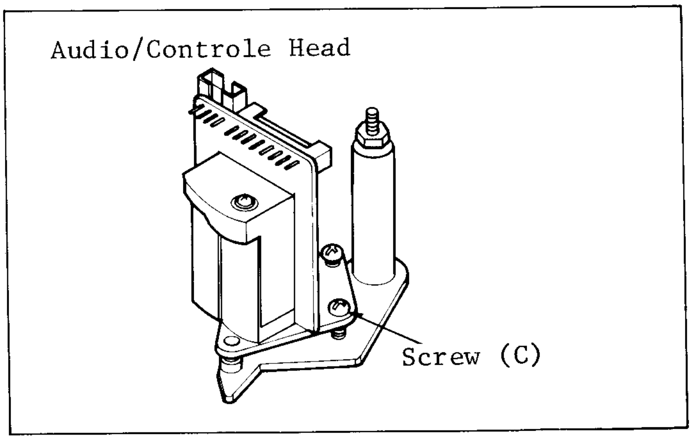

Audio/Controle Head
Screw (C)

Fig. M48.

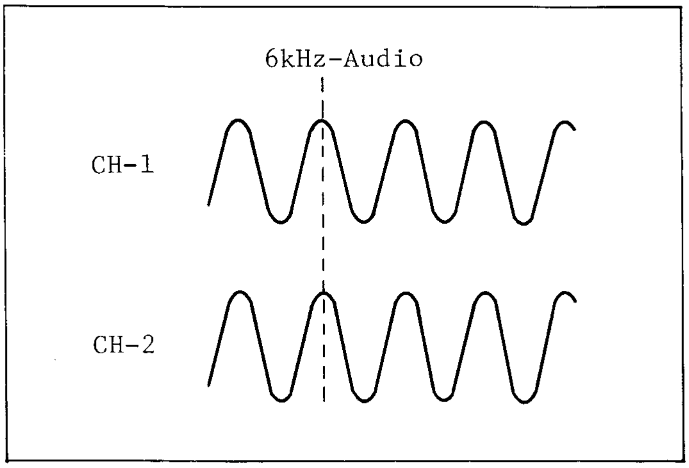


Fig. M49.

4. If the output levels of the both channels are much different, reconfirm and re-adjust the A/C Head Height on Page 2-14.

12-3. Tilt Adjustment

1. Connect the oscilloscope to Test Point TP3012 on the Video Process P.C. Board.
2. Playback the alignment tape, VFM8100H3D and adjust the screw (B) so the RF envelope output level becomes maximum.

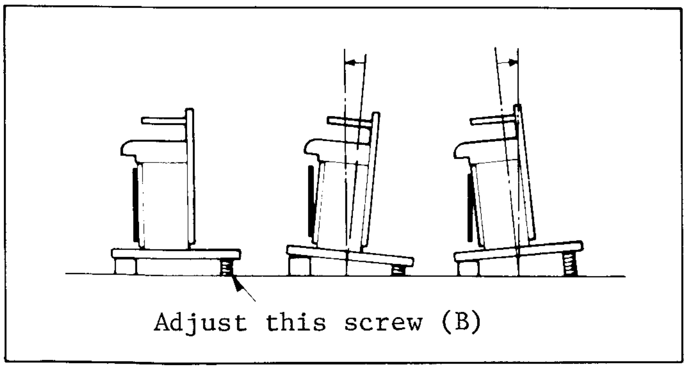


Fig. M50.

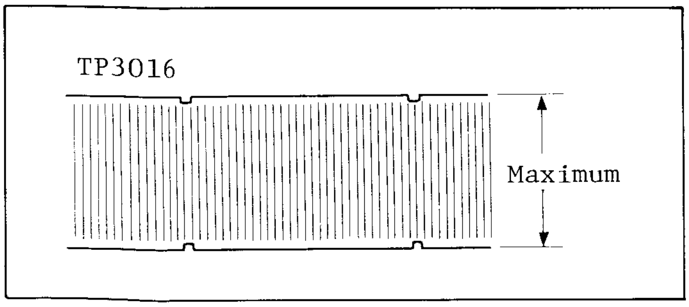


Fig. M51

16. Adjustment of Cassette Holder

This adjustment is required only when the screw (A) was removed accidentally.

* Equipment Required:
Cassette Holder Fixture ... VFK0188

Note:
Before adjustment, ensure the cassette lock lever is unlatched.

1. Remove the Cassette Guide and slightly loosen 6 screws (A) and (B). Keep the cassette holder ejected condition.
2. Insert the fixture and push all the way in till it touches the tabs on the cassette holder. Hold the fixture and cassette holder together with your hand, then slowly lower them with watching all holes and cut-outs till the cassette holder latches.

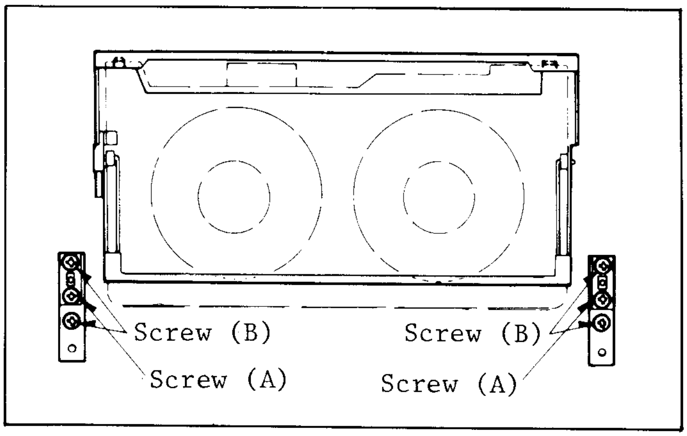


Fig. M52

3. Press the center portion of the fixture down not for missing adjusted position then tighten 6 screws.
4. Supply power and ensure the smooth movement by repeating pressing down and ejecting of the cassette holder.

17. Adjustment of Cam Gear and Mode Select Switch

General Condition:

The mechanism of this model is mostly engaged to the electrical circuit, System Control Circuit, through the mode select switch. Therefore the relation between the mode switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on.
If the adjustment of this item is performed inproperly, the deck will be unloaded or compulsorily stopped. And it will result being damaged at any mechanical or electrical parts.

A. Adjustment Procedures of Cam Gear

1. Turn Loading gear clockwise until the post 2 and 3 were fully unloaded. The small projection on the loading gear will be top portion under the condition of Unloading Completion.

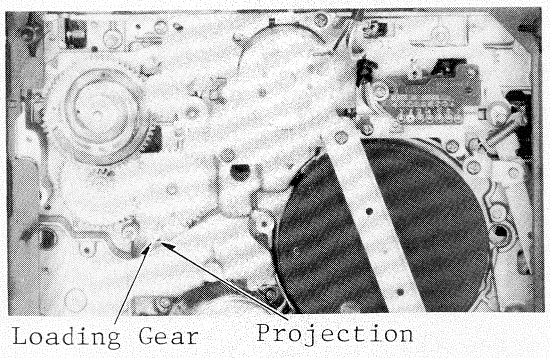

Loading Gear
Projection

Fig. M53

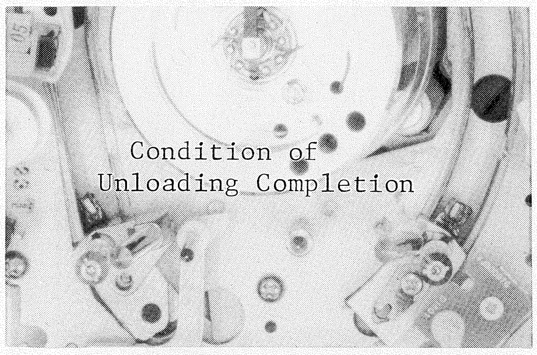

Condition of
Unloading Completion

Fig. M54

2. Install the action gear so the hole on the action gear meets the projection on the loading gear. Ensure that the loading gear is still in the condition of the unloading completion.

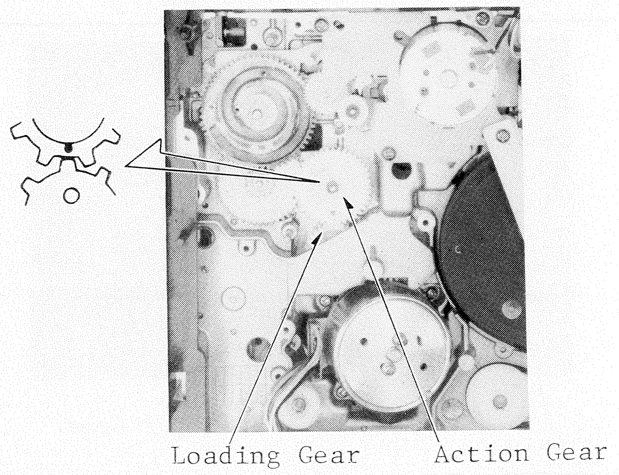

Loading Gear
Action Gear

Fig. M55

3. Slowly slide the main rod so the V-shaped mark meet the V-shaped mark of the mode select switch. With the result, main rod and mode select switch are in a position to be stop (unloading completion) mode.
4. Insert the cam gear so the hole (A) on the gear meets the hole on the main rod. To meet the two holes easier, use the small hex. wrench (VFK75) or metal pin. Also ensure the two V-shaped marks are fixed.

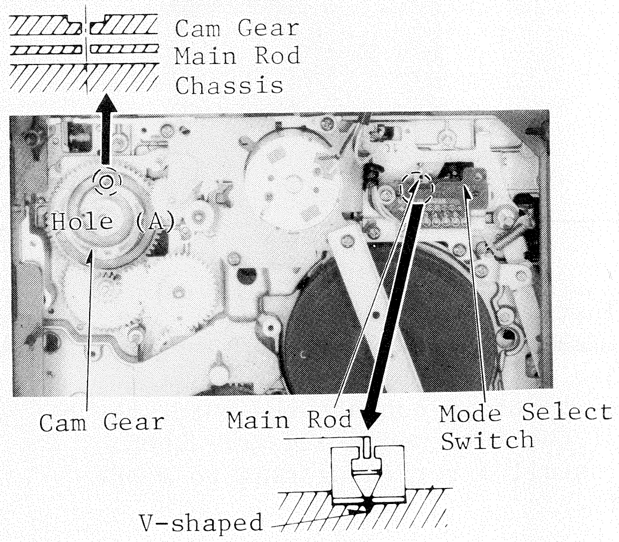

Cam Gear
Main Rod
Chassis
Hole (A)
Cam Gear
Main Rod
Mode Select Switch
V-shaped

Fig. M56

5. Install the sector gear so the pin on the sector gear meets the inner slot of the cam gear (simple slot side). And install 2 retaining rings to mount cam gear and sector gear.

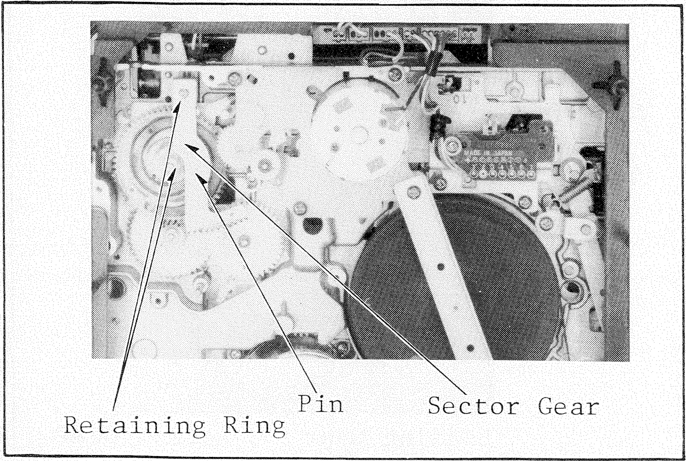

Retaining Ring
Pin
Sector Gear

Fig. M57

6. Final figure should become as shown below, and at the same time two V-shaped marks are fixed at the mode select switch.

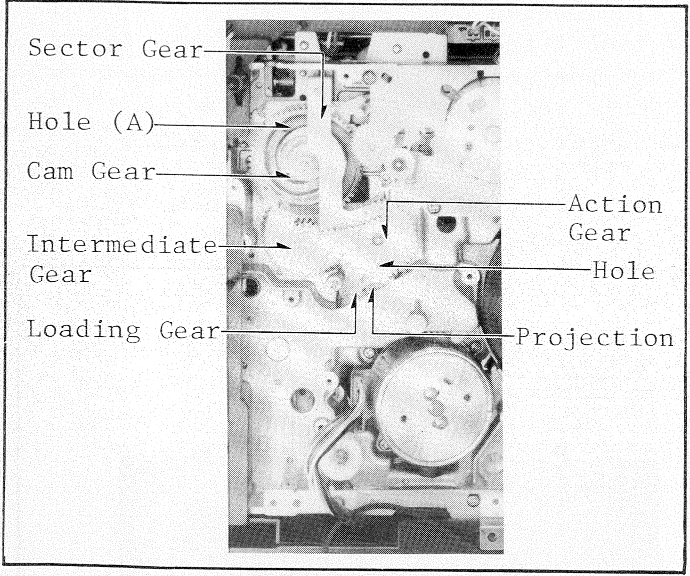

Sector Gear
Hole (A)
Cam Gear
Intermediate Gear
Loading Gear
Action Gear
Hole
Projection

Fig. M58

7. Install the gear protector and tighten the nut for mounting it. And install the large gear so the teeth of it contact the outer teeth of the intermediate gear. Then install a retaining ring to mount it.

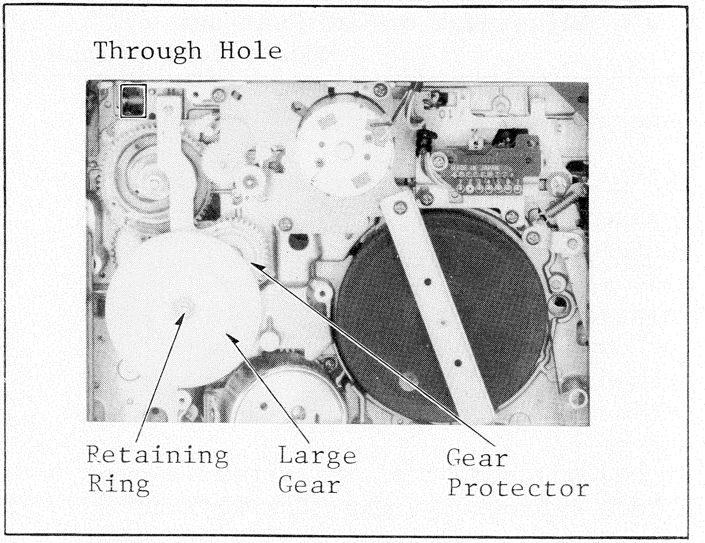

Through Hole
Retaining Ring
Large Gear
Gear Protector

Fig. M59

8. Set the cassette lock lever unit closed and install it from the hole on the chassis shown above.

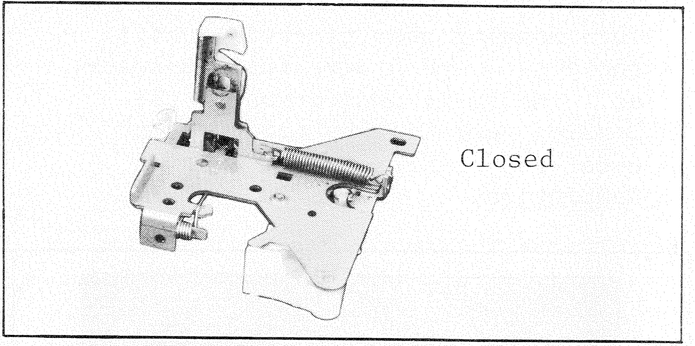


Fig. M60

9. Tighten 2 screws (B), install the belts and belt cover and tighten a screw (C). Turn the large pulley in both direction to confirm the smooth movement of this mechanism.

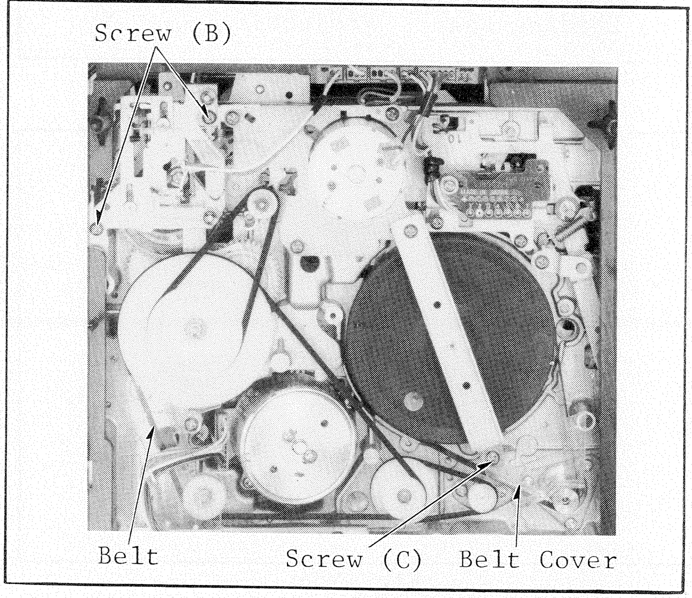

Screw (B)
Belt
Screw (C)
Belt Cover

Fig. M61

B. Adjustment Procedures of Mode Select Switch

1. Fix the main rod in the condition of unloading completion.
2. Slightly loosen two screws (A).
3. Adjust the position of the mode select switch so that the two V-shaped marks of the mode select switch just correspond at the same position. Then tighten two screws (A).
4. Make sure that the movement of the deck is in normal condition.

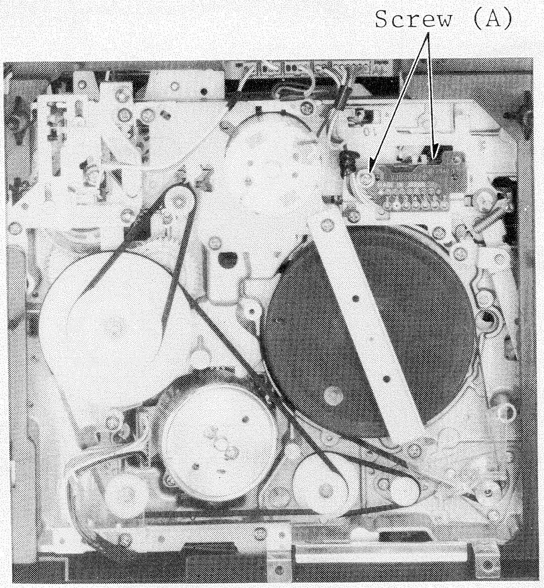


Fig. M62

18. Position Adjustment of Cassette Down Switch

* Equipment Required:

Fine Adjustment Screw driver
.... (VFK0136)

1. Place the unit in STOP mode.
2. Loosen screw (A) and insert the fine adjustment screw driver into the hole (B).
3. Turn the fine adjustment screw driver clockwise.
   So that the reafs of the switch touches to ON the switch.
4. Place the unit in STOP mode and confirm the reafs of the switch are away to OFF the switch.

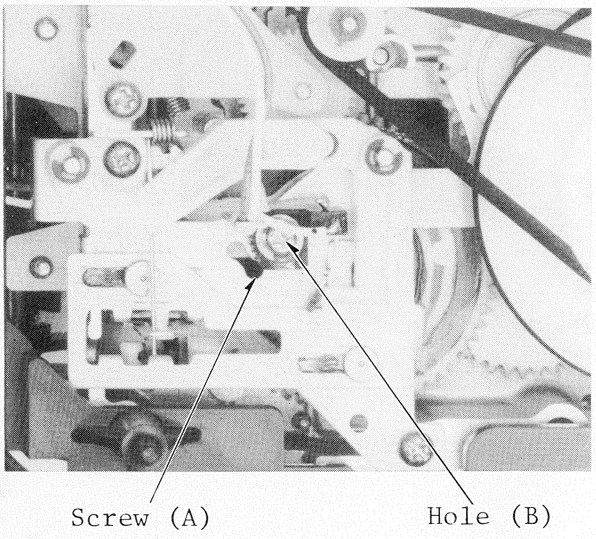
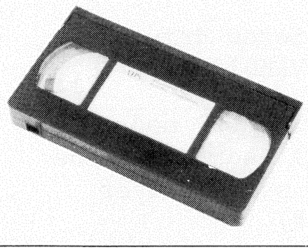


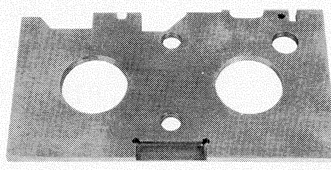
Fig. M63

Servicing Fixtures & Tools

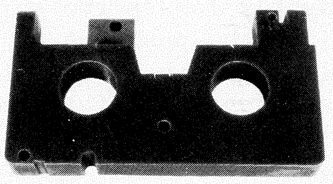
VFM8100H3D VHS Alignment Tape



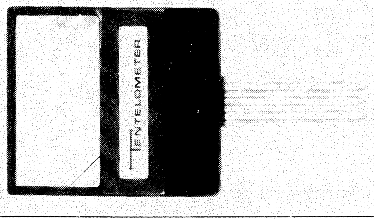
VFK0191 Post Adjustment Plate



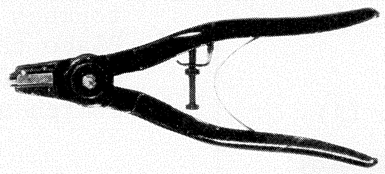
VFK0188 Cassette Holder Fixture



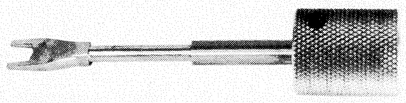
Back Tension Meter
(Tentelometer, Made in U.S.A.)



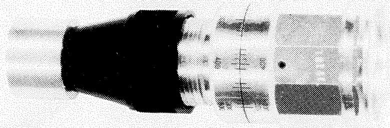
VFK0144 Retaining Ring Remover (3mm)
VFK0145 Retaining Ring Remover (4mm)



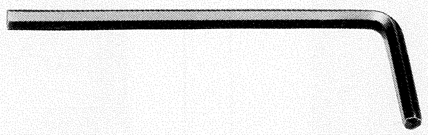
VFK0189 H-Portion Adj. Fixture



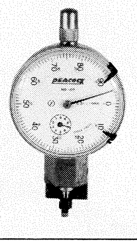
VFK0133 Dial Torque Gauge
VFK0134 Adaptor for VFK0133
VFK0180 (Plastic Clamper Only)



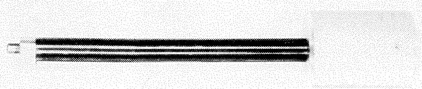
VFK0146 Hex. Wrench (0.9mm)
VFK75 Hex. Wrench (1.25mm)
VFK76 Hex. Wrench (1.5mm)



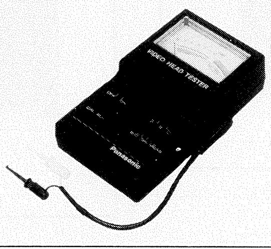
VFK0190 Reel Table Height Jig



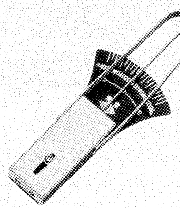
VFK0135 Eccentric Screwdriver



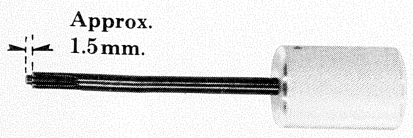
VFK0225 Head Tester



VFK66 Fan Type Tension Gauge

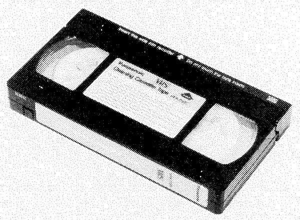


VFK0136 Fine Adjustment Screwdriver

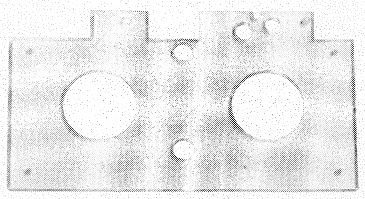


Grind the top portion approximately 2.5mm.

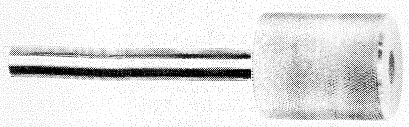
VFK0185 Cleaning Cassette Tape



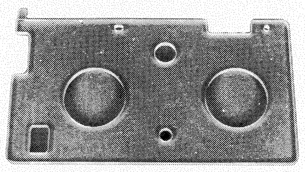
VFK0141 Capstan Reference Plate



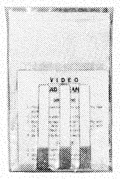
VFK0137 Post Adjustment Screwdriver



VFK0187 Tension Post Adj. Fixture



VFK27 Head Cleaning Stick



MOR265 Morlytone Grease

ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete electrical adjustment procedures which may be required for electronic circuits of VHS video cassette recorder.

1. Test Equipments

To perform the electrical adjustments completely, following equipment is required.

1. VTVM (Vacuum Tube Volt Meter) or DVM (Digital Volt Meter)
   Voltage Range: 0.001 - 50V
2. Dual-Trace Oscilloscope
   Voltage Range: 0.005 - 50V/div.
   Frequency Range: DC - 10MHz
   Probes: 10:1 or 1:1
3. Frequency Counter
   Frequency Range: 0 : 10MHz
4. Signal Generator (Sinewave)
   Frequency Range: 0 - 10MHz
5. Video Sweep Generator
   Frequency Range: 0 - 10MHz
6. Colour Receiver or Monitor TV
7. Plastic Tip Driver
8. VHS Alignment Tape (VFM8100H3D)

2. Adjustment Procedures

These adjustment procedures consist of the following sections.

1. Power Supply Section
2. System Control Section
3. Servo & Still Section
4. Video & Colour Section
5. Audio Section
6. Timer Section
7. TV Demodulator Section

2-1. POWER SUPPLY SECTION

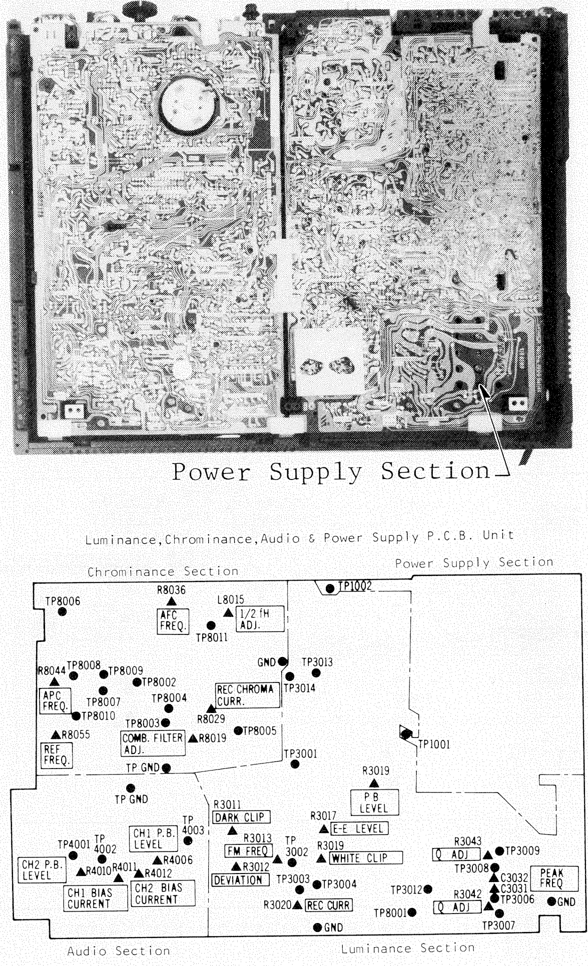

Power Supply Section
Luminance, Chrominance, Audio & Power Supply P.C.B. Unit
Chrominance Section
Power Supply Section
TP8006
R8036
AFC FREQ.
L8015
1/2 fH ADJ.
TP8011
TP1002
GND
TP3013
TP3014
R8044
TP8008
TP8009
TP8002
APC FREQ.
TP8007
TP8004
REC CHROMA CURR.
TP8010
R8029
TP8003
R8055
COMB. FILTER ADJ.
R8019
TP8005
REF FREQ.
TP GND
TP3001
TP1001
R3019
P B LEVEL
TP GND
R3011
DARK CLIP
R3017
E-E LEVEL
TP 4003
CH1 P.B. LEVEL
R3013
FM FREQ
TP 3002
R3019
WHITE CLIP
R3043
Q ADJ
TP3009
TP4001
TP 4002
R4006
CH2 P.B. LEVEL
R4010
R4011
R4012
R3012
DEVIATION
TP3008
C3032
PEAK FREQ
C3031
CH1 BIAS CURRENT
CH2 BIAS CURRENT
TP3003
TP3004
TP3012
R3042
TP3006
R3020
REC CURR
TP8001
Q ADJ
GND
TP3007
GND
Audio Section
Luminance Section

Fig. E1 Power Supply Section

2-1-1. Confirmation of Regulated +9V

Test Point: TP1002

1. Place the unit in STOP mode.
2. Connect the DVM to TP1002 on the Power Supply Sections.
3. Make sure that the indication of DVM is 9.1 ± 0.1V DC.

2-2. SYSTEM CONTROL SECTION

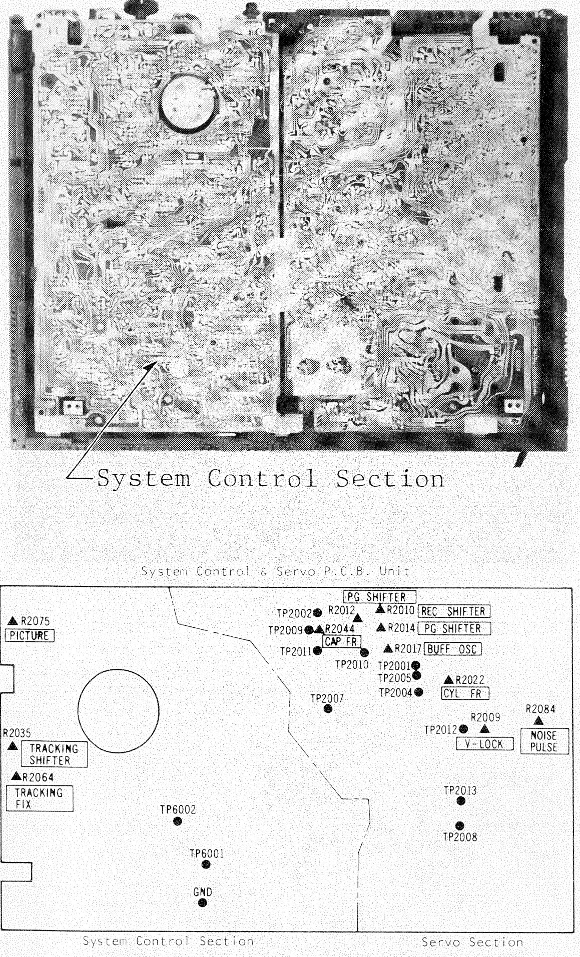

System Control Section
System Control & Servo P.C.B. Unit
PG SHIFTER
TP2002
R2012
R2010
REC SHIFTER
TP2009
R2044
R2014
PG SHIFTER
CAP FR
TP2011
R2017
BUFF OSC
R2075
PICTURE
TP2010
TP2001
TP2005
TP2004
R2022
CYL FR
TP2007
R2084
R2009
TP2012
V-LOCK
NOISE PULSE
R2035
TRACKING SHIFTER
R2064
TRACKING FIX
TP6002
TP2013
TP2008
TP6001
GND
System Control Section
Servo Section

Fig. E2 System Control Section

2-2-1. Confirmation of Clock Frequency of Microprocessor

Test Point: Pin 13 of IC6001

1. Place the unit in STOP mode.
2. Connect the scope to pin 13 of IC6001 on the System Control Section.
3. Make sure that the clock pulse width A is 900μsec ± 9μsec and the period is 16.7msec ± 1.7msec as shown below.

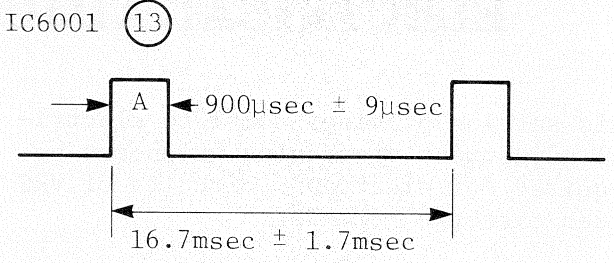

IC6001 ⑬
A
900μsec ± 9μsec
16.7msec ± 1.7msec

Fig. E3 Clock Pulse

2-3. SERVO SECTION

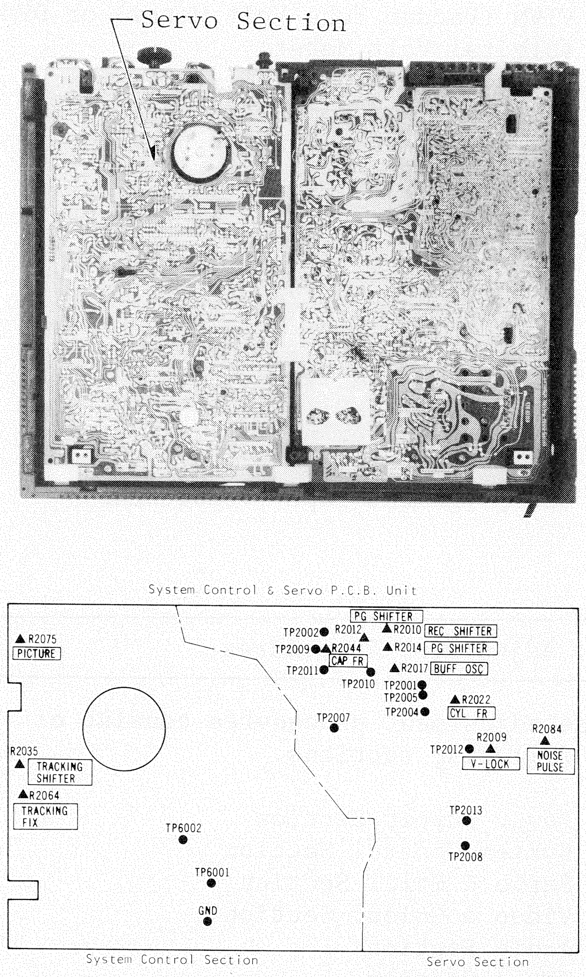

Servo Section
System Control & Servo P.C.B. Unit
PG SHIFTER
TP2002
R2012
R2010
REC SHIFTER
TP2009
R2044
R2014
PG SHIFTER
CAP FR
TP2011
R2017
BUFF OSC
R2075
PICTURE
TP2010
TP2001
TP2005
TP2004
R2022
CYL FR
TP2007
R2084
R2009
TP2012
V-LOCK
NOISE PULSE
R2035
TRACKING SHIFTER
R2064
TRACKING FIX
TP6002
TP2013
TP2008
TP6001
GND
System Control Section
Servo Section

Fig. E4 Servo Section

2-3-1. Buffer Oscillator Frequency Adjustment

Test Point: TP2001
Adjustment: R2017 (Buffer OSC)

1. Do not supply any video signal to the VIDEO INPUT on the front panel.

2. Connect the scope to TP2001 on the Servo Section, and place the unit in REC.PLAY mode.
3. Adjust R2017 on the same section so that the period of "T" becomes 21 $^{+0.2}_{-0}$ msec.

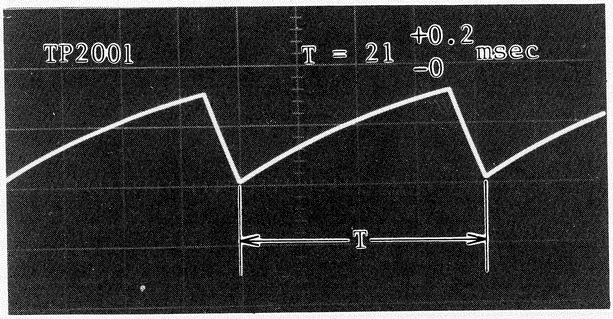


Fig. E5 2V/5msec. div.

4. Next, supply a video signal to the VIDEO INPUT.
5. Make sure that the above period of "T" is 20msec.

2-3-2. Cylinder Free Run Adjustment

Test Points: TP2003, TP2004, TP2005
Adjustment: R2022 (Cylinder Free Run)

1. Supply a video signal to the VIDEO INPUT on the front panel or tune in a local on-air TV program.
2. Connect the scope CH1 to TP2003 and CH2 to TP2004 on the Servo Section.
3. Place the unit in REC.PLAY mode.
4. Pre-adjust R2022 on the same section so that the both waveforms, head switching pulse and trapezoidal waveform are phase-locked.

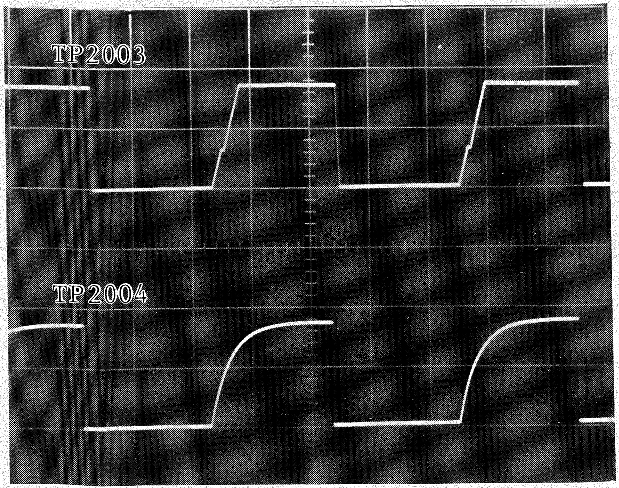


Fig. E6 TP2003 5V/10msec. div.
TP2004 5V/10msec. div.

5. Connect the DVM to TP2005 on the Servo Section.
6. Adjust R2022 so that the indication of DVM becomes 3.8 ± 0.1V DC.
7. Make sure that above waveforms are phase-locked.

2-3-3. Capstan Free Run Adjustment

Test Points: TP2009, TP2010, TP2011
Adjustment: R2044 (Capstan Free Run)

1. Supply a video signal to the VIDEO INPUT on the front panel or tune in a local on-air TV program.
2. Connect the scope CH1 to TP2009 and CH2 to TP2010 on the Servo Section.
3. Place the unit in REC.PLAY mode.
4. Pre-adjust R2044 on the same section so that the both waveforms, trapezoidal waveform and sampling pulse are phase-locked.

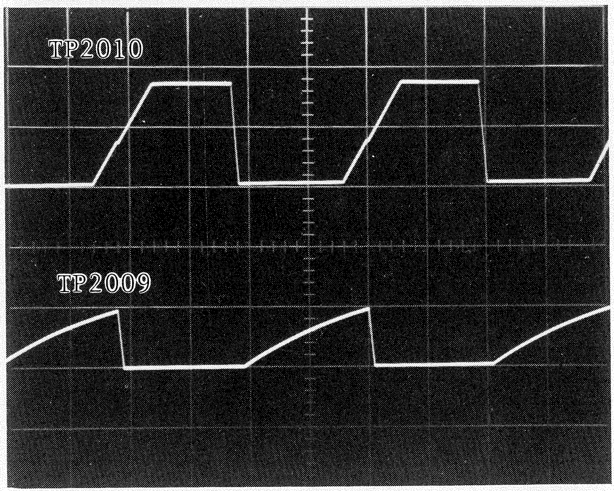


Fig. E7 TP2010 5V/10msec. div.
TP2009 5V/10msec. div.

5. Connect the DVM to TP2011 on the Servo Section.
6. Adjust R2044 so that the indication of DVM becomes 4.1 ± 0.1V DC.
7. Make sure that the both waveforms are phase-locked.

2-3-4. PG Shifter Adjustment

Test Points: TP2002, TP3013
Adjustments: R2012, R2014 (PG Shift)

1. Playback the alignment tape (VFM8100H3D).
2. Connect the scope CH1 to TP3013 on the Video Section and CH2 to TP2002 on the Servo Section.
3. Set the scope to the Delay mode, and expand the V-sync portion.
4. Adjust R2012 on the servo Section so that the falling edge of switching pulse is 6 ± 0.5H before the beginning of the V-sync as shown below.

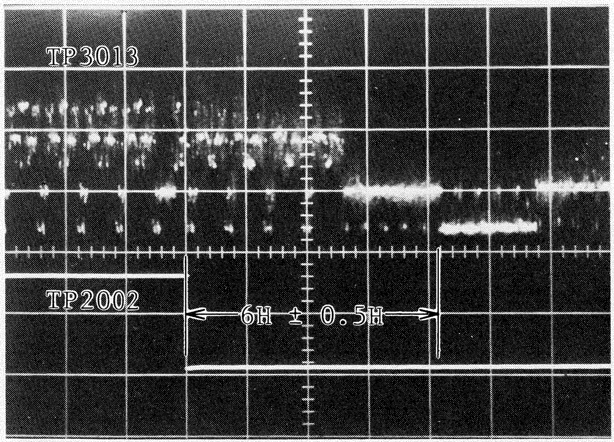


Fig. E8 TP2002 5V/0.1msec. div.
TP3013 1V/0.1msec. div.

5. Change the slope selector on the scope front "+" to "-" and adjust R2014 on the same section so that the rising edge of switching pulse is 6 ± 0.5H before the beginning of the V-sync as shown below.

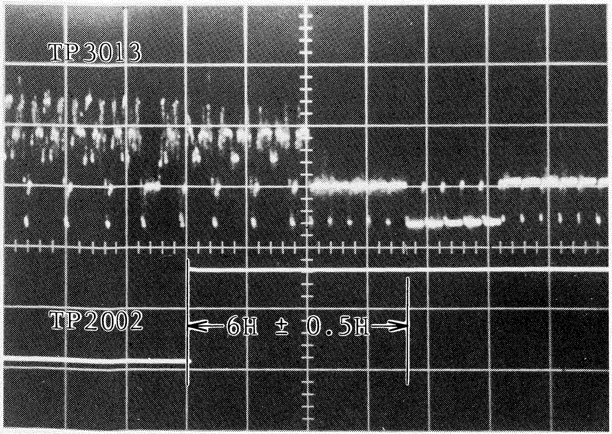


Fig. E9 TP2002 5V/0.1msec. div.
TP3013 1V/0.1msec. div.

6. Switch the slope selector on the scope to either (+) or (-) and adjust R2012 or R2014 for less than 10µsec difference.

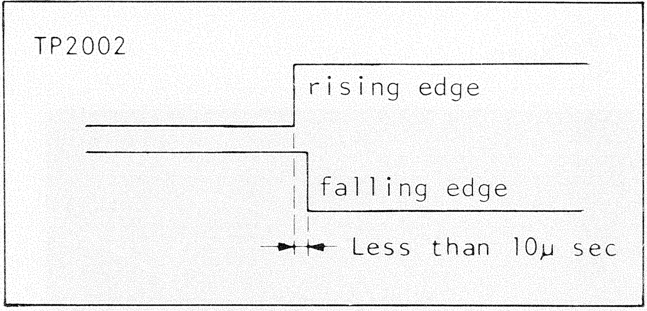


Fig. E10 Switching Edge Difference

2-3-5. REC Shifter Adjustment

Test Points: TP2002, TP3013
Adjustment: R2010 (REC Shift)

1. Supply a video signal to the VIDEO INPUT on the front panel or tune in a local on-air TV program.
2. Connect the scope CH1 to TP3013 on the Video Section and CH2 to TP2002 on the Servo Section.
3. Place the unit in REC.PLAY mode.
4. Set the scope to the Delay mode, and expand the V-sync portion.
5. Adjust R2010 on the Servo Section so that the head switching position is 6 ± 0.5H before the beginning of the vertical sync as shown below.

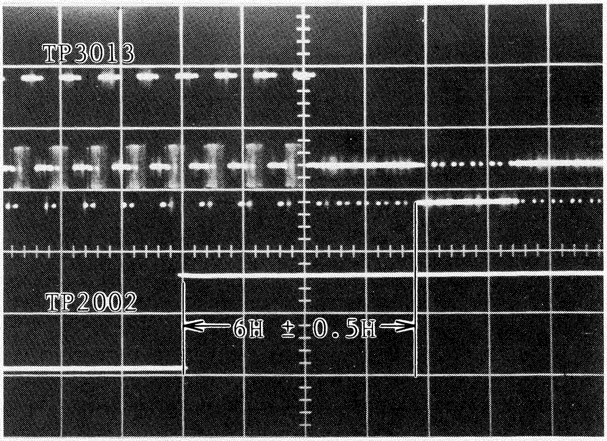


Fig. E11-a TP3013 1V/0.1msec. div.
TP2002 5V/0.1msec. div.

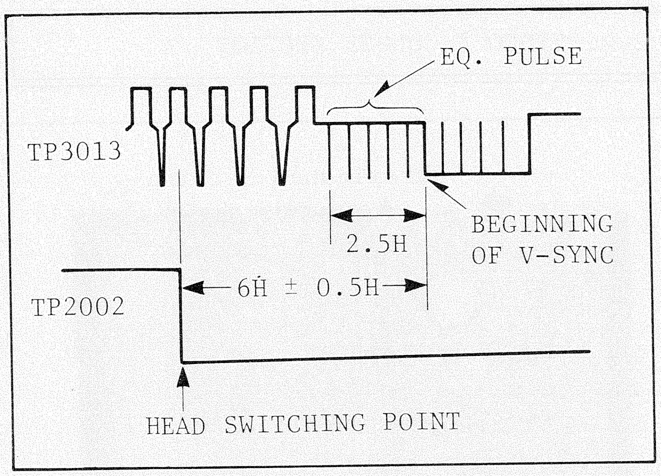


Fig. E11-b

2-3-6. Confirmation of Tracking Fix.

Test Point: TP2009

1. Supply a video signal to the VIDEO INPUT on the front panel or tune in a local on-air TV program.
2. Place the unit in REC.PLAY mode.
3. Connect the scope to TP2009 and confirm the pulse width "B" is 23 ± 3msec as shown below.

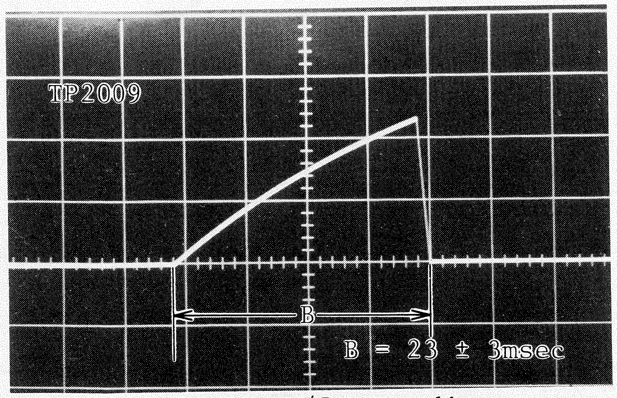


Fig. E12 2V/5msec. div.

2-3-7. Tracking Monostable Multivibrator Adjustment

Test Points: TP2002, TP2009
Adjustment: R2035 (Tracking)

1. Set the TRACKING VR on the front panel to the center detent point.
2. Supply a CCIR signal to the VIDEO INPUT on the same panel, and make a recording for a few minutes.
3. Connect the scope CH1 to TP2002 and CH2 to TP2009 both on the Servo Section.
4. Playback the just recorded portion and adjust R2035 on the same section so that the both waveforms becomes as shown below.

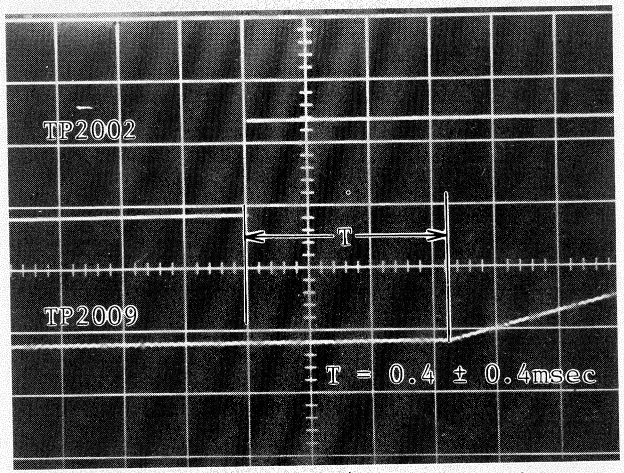


Fig. E13 TP2002 5V/0.1msec. div.
TP2009 0.1V/0.1msec. div.

2-3-8. Confirmation of Short Rewinding Tape Length

1. Set a 30 minutes tape to the unit.
2. Slightly rewind the tape from tape end.
3. Place the unit in REC.PLAY mode and press the PAUSE button. Then, confirm the Short Rewinding tape length is between 4cm and 6cm.

2-3-9. Artificial V-Sync Pulse Phase Adjustment

Test Points: TP2002, TP2012
Adjustments: R2009, R2084

1. Connect the scope CH1 to TP2002 and CH2 to TP2012 both on the Servo Section.
2. Playback the alignment tape (VFM8100H3D) and place the unit in STILL mode.

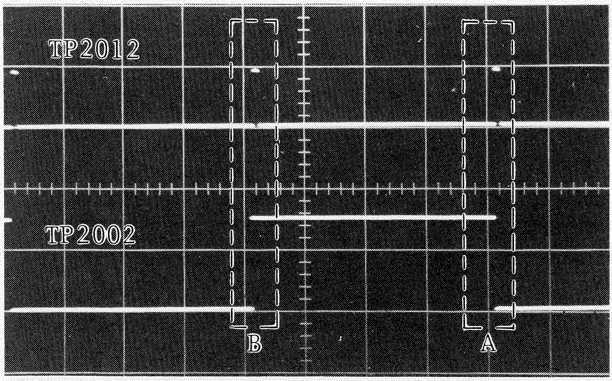


Fig. E14 TP2002 10V/5msec. div.
TP2012 5V/5msec. div.

3. Adjust R2009 on the same section so that the pulse position "A" becomes 150 ± 15µsec.

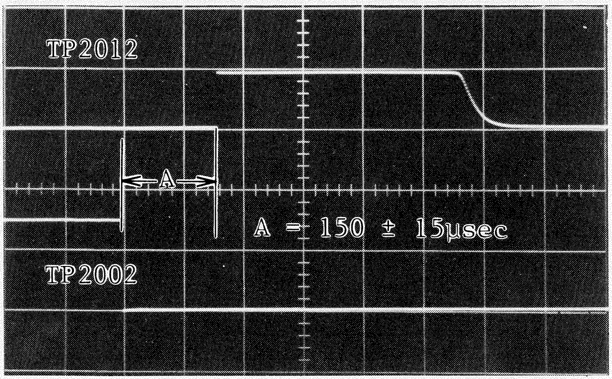


Fig. E15 TP2002 10V/0.1msec. div.
TP2012 5V/0.1msec. div.

4. Adjust R2084 on the same section so that the pulse position "B" becomes 150 ± 15µsec.

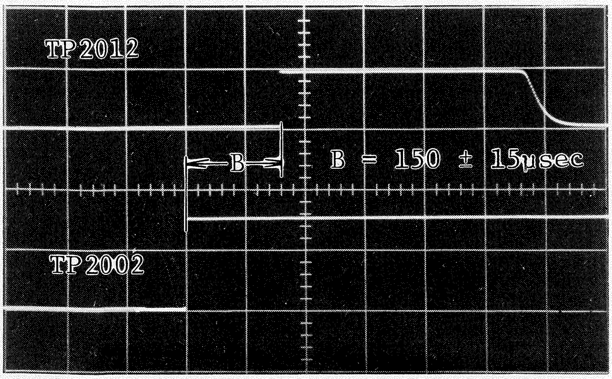


Fig. E16 TP2002 10V/0.1msec.div.
TP2012 5V/0.1msec.div.

2-4. VIDEO & COLOUR SECTION

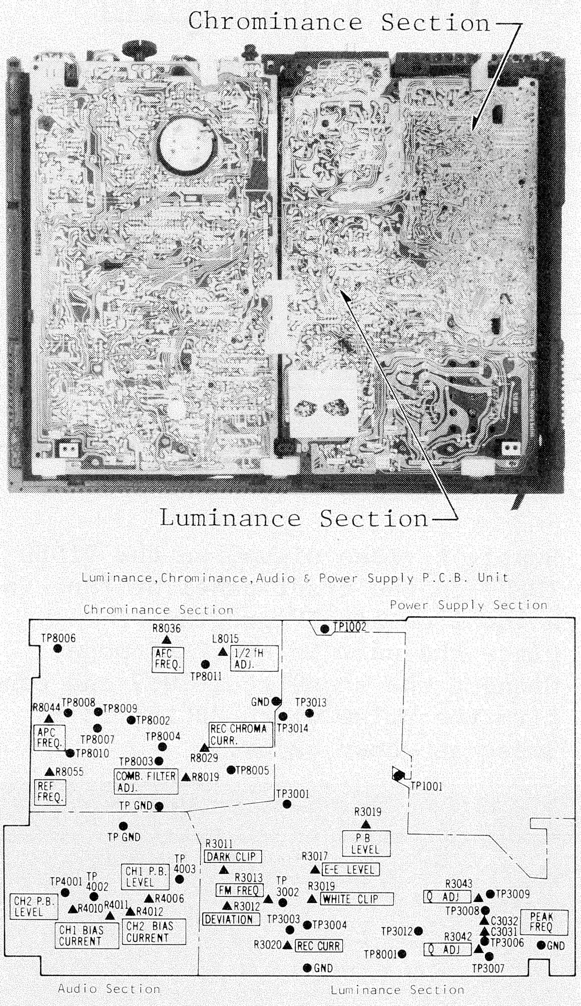

Chrominance Section
Luminance Section
Luminance, Chrominance, Audio & Power Supply P.C.B. Unit
Chrominance Section
Power Supply Section
TP8006
R8036
AFC FREQ.
L8015
1/2 fH ADJ.
TP8011
TP1002
R8044
TP8008
TP8009
TP8002
APC FREQ.
TP8007
TP8004
TP8010
GND
TP3013
TP3014
REC CHROMA CURR.
R8029
TP8003
R8055
COMB. FILTER ADJ.
R8019
TP8005
REF FREQ.
TP GND
TP1001
TP3001
TP GND
R3019
P B LEVEL
R3011
DARK CLIP
R3017
E-E LEVEL
TP 4003
CH1 P.B. LEVEL
TP4001
TP 4002
R3013
FM FREQ
TP 3002
R3019
WHITE CLIP
R3043
Q ADJ
TP3009
CH2 P.B. LEVEL
R4010
R4011
R4006
R4012
R3012
DEVIATION
TP3008
C3032
C3031
PEAK FREQ
CH1 BIAS CURRENT
CH2 BIAS CURRENT
TP3003
TP3004
TP3012
R3042
Q ADJ
TP3006
GND
R3020
REC CURR
TP8001
TP3007
GND
Audio Section
Luminance Section

Fig. E17 Video & Colour Section

2-4-1. E-E Level Adjustment

Test Point: TP3013
Adjustment: R3017 (E-E Level)

1. Supply a colour bar signal to the VIDEO INPUT on the front panel.
2. Place the unit in STOP mode and connect the scope to TP3013 on the Video Section.
3. Adjust R3017 on the same section so that the waveform becomes 2.0 ± 0.1Vp-p.

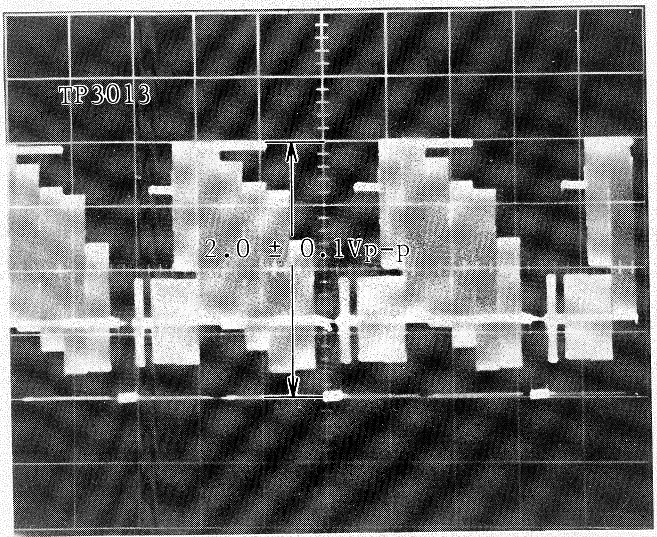


Fig. E18 500mV/20μsec. div.

2-4-2. Dark & White Clip Adjustment

Test Point: TP3002
Adjustment: R3011 (Dark Clip)
R3019 (White Clip)

1. Supply a colour bar signal to the VIDEO INPUT on the front panel and place the unit in STOP mode.
2. Connect the scope to TP3002 on the Video Section.
3. Adjust R3011 and R3019 on the same section so that the waveform becomes as shown below.

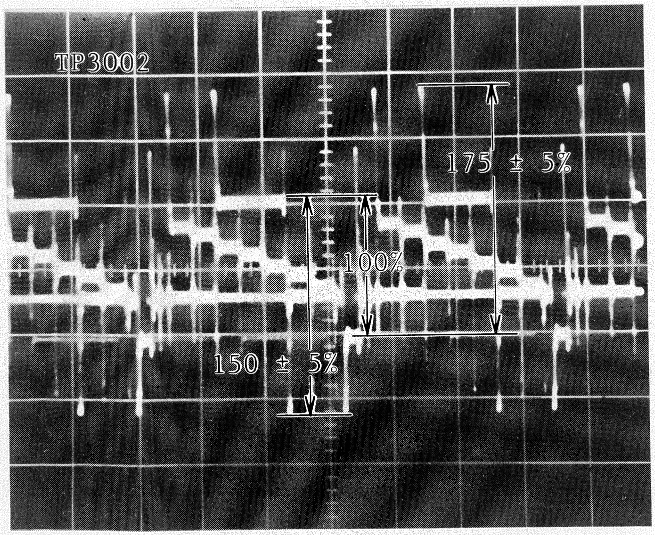


Fig. E19 200mV/20μsec. div.

2-4-3. Sync Tip Frequency and Deviation Adjustment

Test Points: TP3003, TP3013
Adjustments: R3012, R3013, R3091

1. Do not supply and video signal to the VIDEO INPUT on the front panel.
2. Place the unit in STOP mode, and connect the frequency counter to TP3003 on the Video Section.
3. Adjust R3013 so that the indication of the frequency counter becomes 3.8 ± 0.1MHz.
4. Next, playback the alignment tape (VFM8100H3D).
5. Connect the scope to TP3013 on the Video Section.
6. Adjust R3091 on the same section so that the video level becomes 2.0 ± 0.1Vp-p.
7. After above adjustments, supply a colour bar signal to the VIDEO INPUT on the front panel, and make a recording for a few minutes.
8. Connect the scope to TP3013, and play back the just recorded portions.
9. Adjustment R3012 until the playback level becomes 2.0 ± 0.1Vp-p, repeating the procedures in item 7 and item 8.

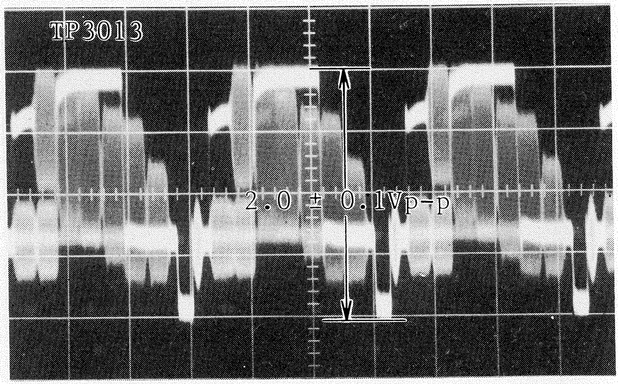


Fig. E20 500mV/20μsec. div.

2-4-4. Video Rec Current Adjustment

Test Points: TP3008 (HOT)
TP3009 (GND)
Adjustments: R3020 (Y. Rec. Curr.)
R8029 (C. Rec. Curr.)

1. Supply a colour bar signal to the VIDEO INPUT on the front panel and place the unit in REC.PLAY mode.
2. Connect the scope to TP3008 (HOT) and TP3009 (GND) on the Video Section.
3. Connect a jumper between TP3003 and GND on the same section.
4. Adjust R8029 on the same section so that the waveform becomes as shown below.

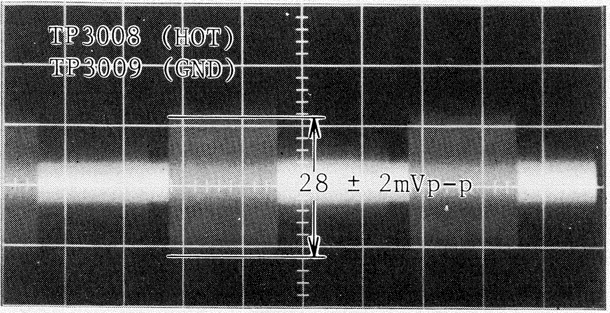


Fig. E21 10mV/5msec. div.

5. Remove a jumper, and adjust R3020 on the same section so that the waveform becomes as shown below.

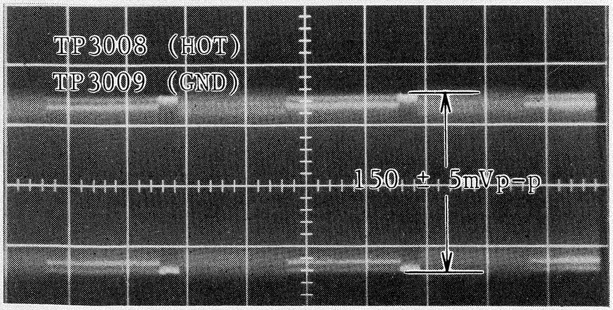


Fig. E22 50mV/5msec. div.

2-4-5. AFC Frequency Adjustment

Test Point: TP8006
Adjustment: R8036 (AFC)

1. Disconnect the connector from the VIDEO INPUT on the front panel. .
2. Connect the frequency counter to TP8006 on the Colour Section, and place the unit in STOP mode.
3. Adjust R8036 on the same section so that the indication of the frequency counter becomes 15.625kHz ± 50Hz.

2-4-6. APC Frequency Adjustment

Test Point: TP8008
Adjustment: C8044 (APC)

1. Disconnect the connector to the VIDEO INPUT on the front panel, and place the unit in STOP mode.
2. Connect a jumper between TP8007, TP8009 and GND on the Colour Section.
3. Connect the frequency counter by using a 10:1 probe to TP8008 on the same section.
4. Adjust C8044 on the same section so that the indication of the frequency counter becomes 4.433619MHz ± 50Hz.

2-4-7. Reference Oscillator Adjustment

Test Point: TP8010
Adjustment: C8055 (REF.)

1. Do not supply any video signal to the VIDEO INPUT on the front panel, and place the unit in STOP mode.
2. Connect the frequency counter to TP8010 on the Colour Section by using a 10:1 probe.
3. Adjust C8055 on the same section so that the indication of the frequency counter becomes 4.433619MHz ± 10Hz.

2-4-8. Comb Filter Adjustment

Test Point: TP8005
Adjustment: R8016

1. Set the Signal Select Button on the Sweep Generator to "CHROMA" and turn the sync, burst and set up to off.
2. Supply the output of the Sweep Generator to TP8003 on the Colour Section.
3. Connect the scope to TP8005 and set the output level of the Sweep Generator to 600mVp-p. Put the marker at 4.43MHz portion.

4. Adjust R8016 so that carrier leakage "A" at 4.43MHz becomes minimum as shown below.

Note:
Set the COLOUR-TEST select switch on the rear panel to colour position.

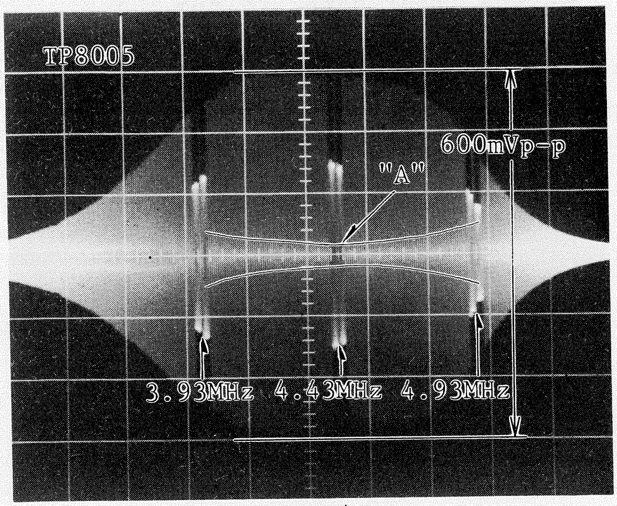


Fig. E23 100mV/1msec. div.

2-4-9. SECAM Killer Adjustment

Test Point: Pin 9 of IC8005
Adjustment: L8015

1. Supply a SECAM colour bar signal to the VIDEO INPUT on the front panel, and place the unit in REC.PLAY mode.
2. Connect the scope to pin 9 of IC8005 on the Colour Section.
3. Adjust L8015 so that the point "A" is the lower peak on the waveform as shown below.

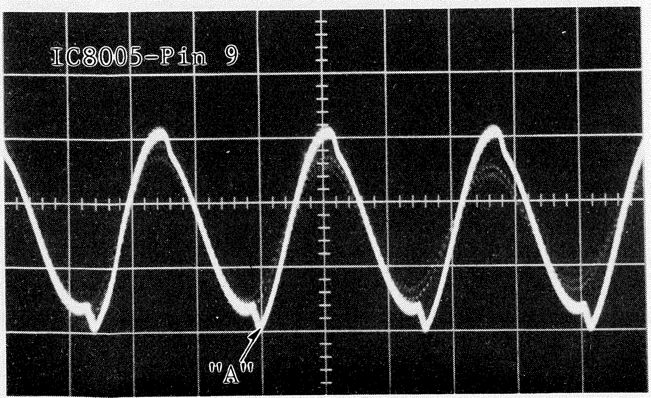


Fig. E24 2V/50μsec. div.

2-4-10. Playback Level Adjustment

Test Point: TP3013
Adjustment: R3091

1. This adjustment must be done after the adjustment of Head Amp Section.
2. Supply a colour bar signal to the VIDEO INPUT on the front panel, and make a recording for a few minutes.
3. Connect the scope to TP3013 on the Video Section, and playback the just recorded portions.
4. Adjust R3091 on the same section so that the video level becomes 2.0 ± 0.1Vp-p. Then make sure that the cyan level is 1.1 ± 0.15Vp-p.

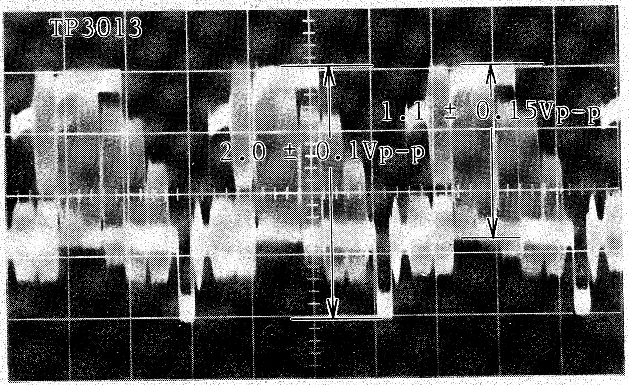


Fig. E25 500mV/20μsec. div.

2-4-11. Confirmation of Test Signal Frequency

Test Point: TP3014

1. Do not supply any video signal to the VIDEO INPUT on the front panel.
2. Place the unit in STOP mode.
3. Set the Colour/Test Signal Select Switch on the Output Jack Board to TEST SIGNAL.
4. Connect the scope to TP3014, and make sure that a period of the H-Sync is 64 ± 0.3μsec as shown below.

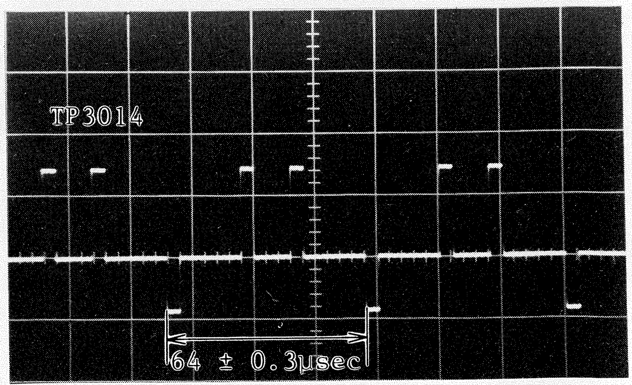


Fig. E26 500mV/20μsec. div.

2-4-12. Head Amp Peak Frequency Adjustment

Test Point: TP8001
Adjustments: C3031, C3032 (PEAK FREQ.)
R3042, R3043 (Q ADJ.)

1. Set the output of the Sweep Generator to 100mVp-p and down the level 3dB to 71mVp-p by the ATT.
2. Supply the above signal to TP3006 and TP3008 on the Video Section through the resistor 39kΩ as shown below.

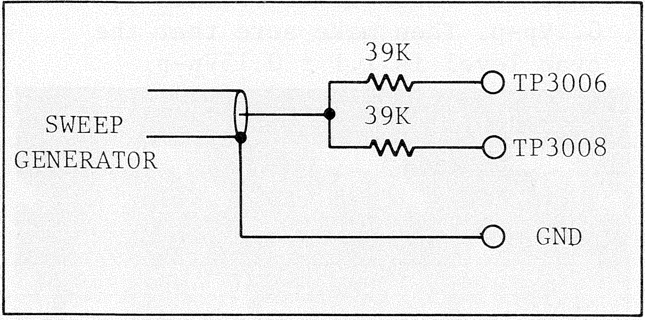

SWEEP
GENERATOR
39K
39K
TP3006
TP3008
GND

Fig. E27

3. Place the unit in PLAYBACK mode with a blank tape.
4. Connect the scope to TP8001 on the same section.
5. Adjust R3042 and R3043 on the same section so that the level at 4.9MHz becomes three times bigger than that at 2MHz, to keep its balance.
6. Adjust C3031 and C3032 on the same section so that the peak on the scope becomes 4.9MHz as shown below.

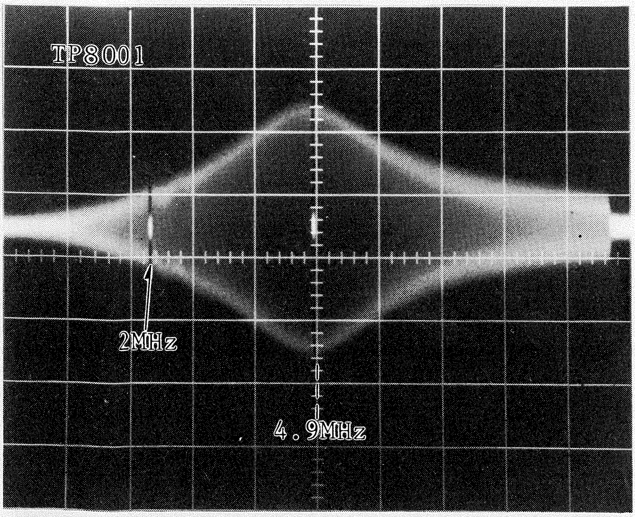


Fig. E28 200mV/2msec. div.

2-4-13. Head Amp Frequency Response Adjustment

Test Point: TP3013
Adjustments: R3042, R3043

1. Set the PICTURE SHARPNESS CONTROL VR on the front panel to the click point.
2. Set the output level of the Sweep Generator as shown below.

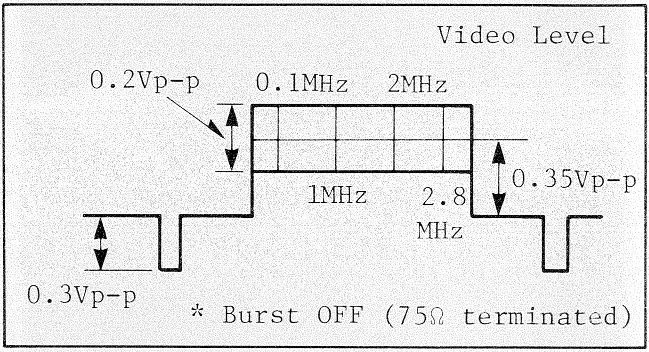

Video Level
0.2Vp-p
0.1MHz
2MHz
1MHz
2.8
MHz
0.35Vp-p
0.3Vp-p
* Burst OFF (75Ω terminated)

Fig. E29

3. Supply the above signal to the VIDEO INPUT on the front panel, and make a recording for a few minutes.
4. Connect the scope to TP3013 on the Video Section, and playback the just recorded portions.
5. Adjust R3042 and R3043 on the same section so that the waveform becomes as shown below.

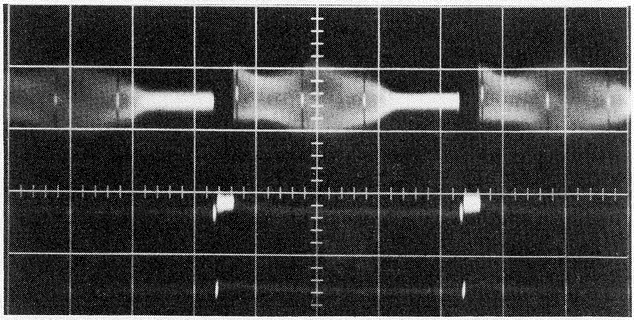


Fig. E30 500mV/5msec. div.

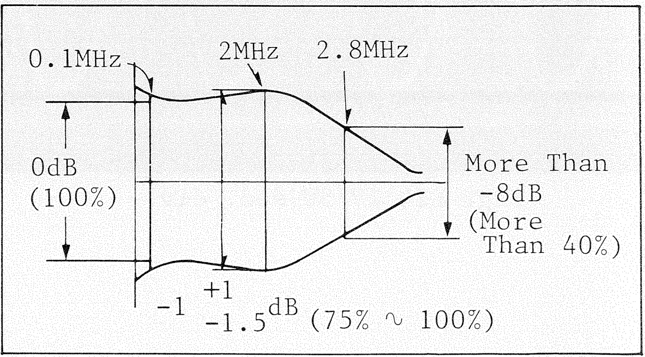
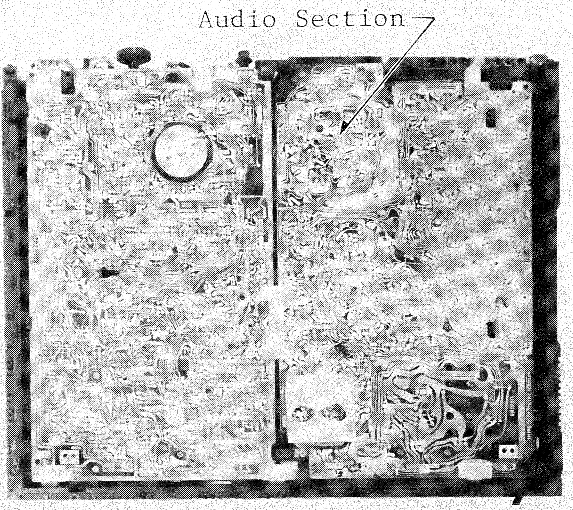
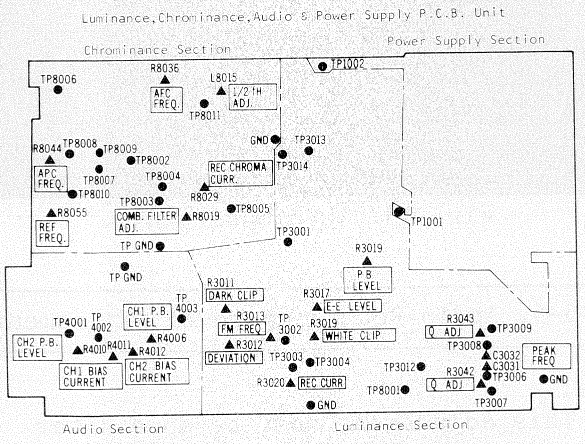

0.1MHz
2MHz
2.8MHz
0dB
(100%)
More Than
-8dB
(More
Than 40%)
-1
+1
-1.5
dB
(75% ∿ 100%)

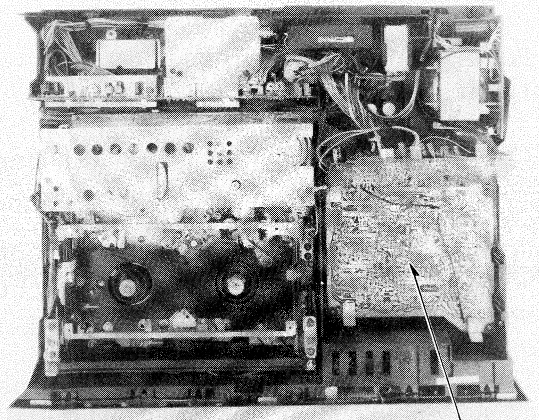
Fig. E31

2-5. AUDIO SECTION

This section describes adjustment procedures of audio circuits. When to perform the following adjustments, the Noise Reduction Switch on the front panel turns to off and Audio Mode Select Switch to CH1 + 2 (stereo) position.


Audio Section


Luminance, Chrominance, Audio & Power Supply P.C.B. Unit
Chrominance Section
Power Supply Section
TP8006
R8036
AFC FREQ.
L8015
1/2 fH ADJ.
TP8011
TP1002
R8044
TP8008
TP8009
TP8002
APC FREQ.
TP8007
TP8004
TP8010
GND
TP3013
TP3014
REC CHROMA CURR.
R8029
TP8003
R8055
COMB. FILTER ADJ.
R8019
TP8005
REF FREQ.
TP GND
TP3001
TP1001
R3019
P B LEVEL
TP GND
R3011
DARK CLIP
TP 4003
R3017
E-E LEVEL
TP4001
TP 4002
CH1 P.B. LEVEL
R3013
TP 3002
R3019
WHITE CLIP
R3043
Q ADJ
TP3009
TP3008
CH2 P.B. LEVEL
R4010
R4011
R4006
R4012
FM FREQ
R3012
DEVIATION
TP3003
TP3004
C3032
C3031
PEAK FREQ
CH1 BIAS CURRENT
CH2 BIAS CURRENT
TP3012
R3042
Q ADJ
TP3006
GND
R3020
REC CURR
TP8001
GND
TP3007
Audio Section
Luminance Section


Sub Audio P.C.B Unit

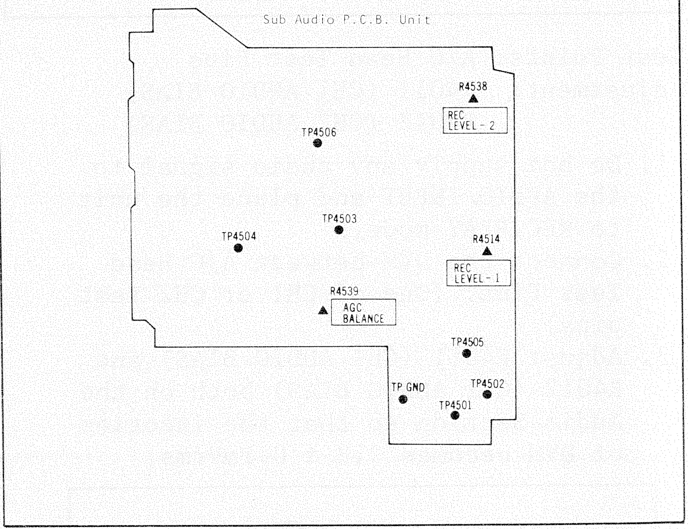

Sub Audio P.C.B. Unit
R4538
REC LEVEL - 2
TP4506
TP4503
TP4504
R4514
REC LEVEL - 1
R4539
AGC BALANCE
TP4505
TP GND
TP4502
TP4501

Fig. E32 Audio Section

2-5-1. AGC Channel Balance Adjustment

Test Points: TP4503, TP4504
Adjustment: R4539

1. Supply an audio signal (1kHz, 0dB) to AUDIO INPUT on the front panel.
2. Connect the scope CH1 to TP4503 and CH2 to TP4504 both on the Sub-Audio PC Board.
3. During STOP mode, adjust R4539 on the same board so that the CH1 and CH2 waveforms are balanced.

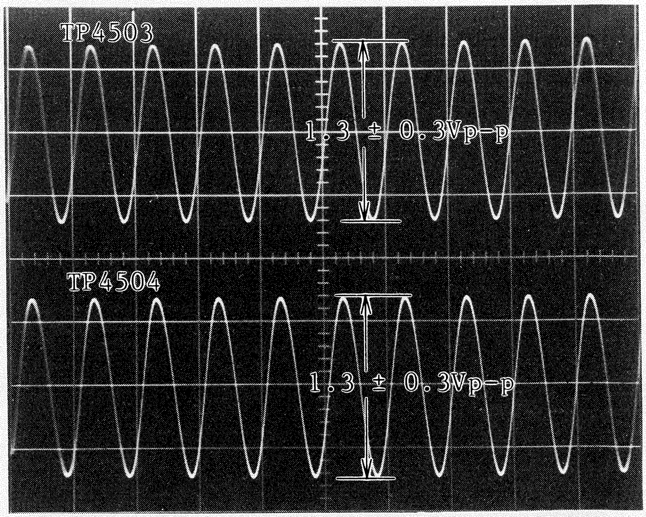


Fig. E33 TP4503 0.5V/1msec. div.
TP4504 0.5V/1msec. div.

4. Confirm that the both waveforms level are 1.3 ± 0.3Vp-p. (355 ∿ 560mVrms)

2-5-2. Audio Bias Current Adjustment

Test Points: A/C Head Test Pins
Adjustment: R4011 (CH1 AUDIO BIAS)
R4012 (CH2 AUDIO BIAS)

1. Do not supply any audio signal to the AUDIO INPUT and place the unit to REC.PLAY mode.
2. Connect the DVM between A/C Head Test Pins. (One of CH1 or CH2 test pins)
3. Adjust R4011 (CH1 AUDIO BIAS) and R4012 (CH2 AUDIO BIAS) both on the Audio Section so that the incotion of DVM becomes 2.2 ± 0.1mVrms.

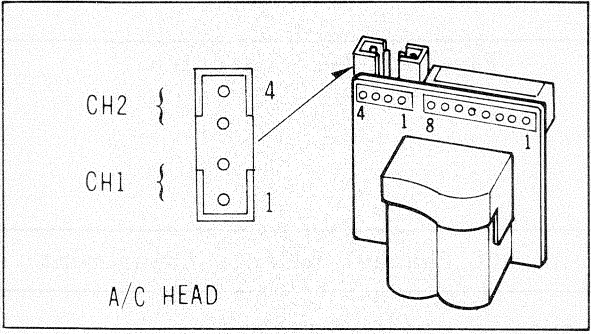


Fig. E34

2-5-3. Audio Playback Level Adjustment

Test Points: TP4503, TP4504
Adjustments: R4006 (CH1 PB LEVEL)
R4010 (CH2 PB LEVEL)

1. Connect the scope CH1 to TP4503 and CH2 to TP4504 both on the Sub-Audio PC Board.
2. Playback the alignment tape (VFM8100H3D).
3. Adjust R4006 (CH1) and R4010 (CH2) both on the Main Audio Section so that levels of the both waveforms are 1.0V ± 40mVp-p as shown below.

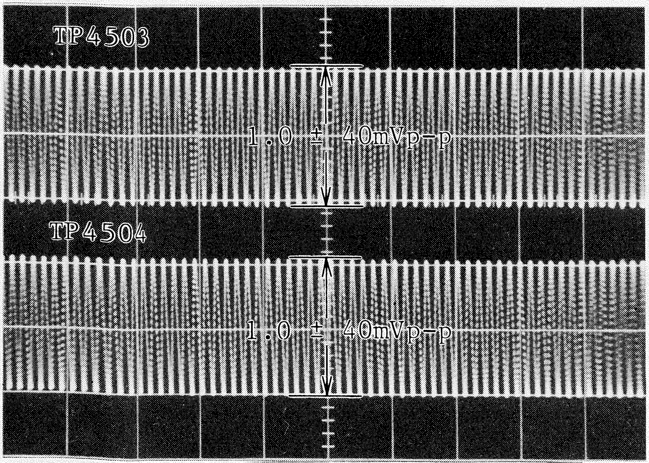


Fig. E35 TP4503 0.5V/1msec. div.
TP4504 0.5V/1msec. div.

2-5-4. Confirmation of Full-Erase Head Oscillation Level

Test Point: Full Erase Head

1. Place the unit in REC.PLAY mode.
2. Connect the scope to Full Erase Head as shown below.

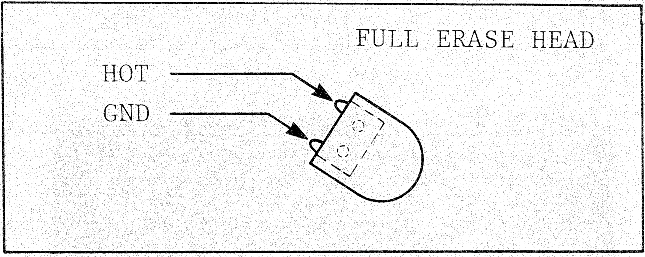


Fig. E36 Full Erase Head

3. Make sure that the oscillation level is more than 35Vp-p.

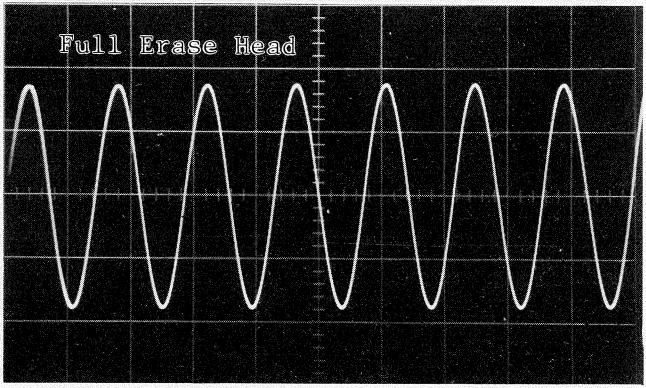


Fig. E37 10V/10μsec. div.

2-5-5. Audio Recording Level Adjustment

Note:

This adjustment must be done after Audio Playback Level Adjustment.

Test Points: TP4503, TP4504
Adjustments: R4514 (CH1), R4538 (CH2)

1. Connect the scope CH1 to TP4503 and CH2 to TP4504 both on Sub-Audio PC Board.
2. Supply an audio signal (1kHz, -10dB: 890mVp-p) to the AUDIO INPUT on the front panel, and make a recording for a few minutes.
3. Playback the just recorded portions and adjust R4514 (CH1) and R4538 (CH2) so that difference of the levels between E-E and V-V becomes less than 1dB. (less than 140mVp-p)

(PLAY BACK)

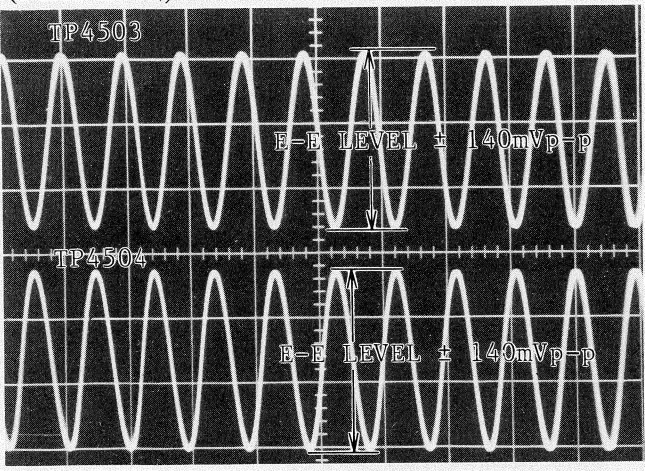


Fig. E38 TP4503 0.5V/1msec. div.
TP4504 0.5V/1msec. div.

2-6. TIMER SECTION

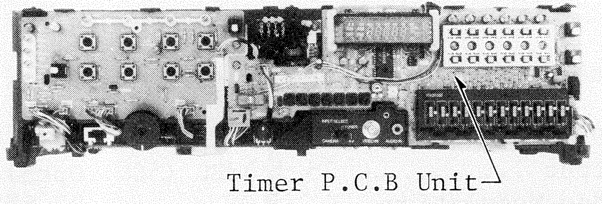

Timer P.C.B Unit

Fig. E39

2-6-1. Clock Oscillation Adjustment

Test Points: TP7501 (HOT)
TP7502 (GND)
Adjustment: R7505

1. Set the Timer Display as shown below, and Timer Mode Switch to "CLOCK" position.

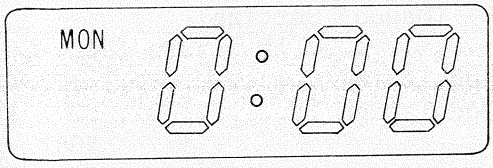


Fig. E40 Timer Display

2. Connect the scope between TP7501 (HOT) and TP7502 (GND) both on the Timer PC Board through the filter as shown below.

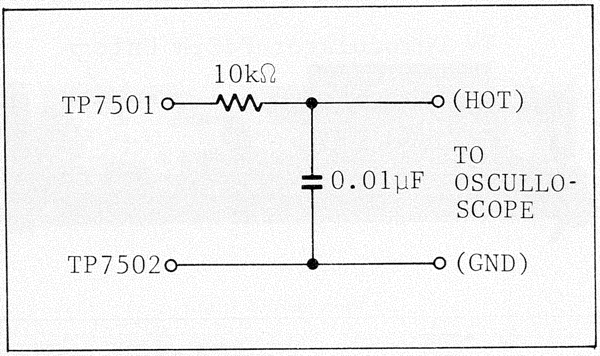

10kΩ
TP7501
(HOT)
0.01μF
TO
OSCULLO-
SCOPE
TP7502
(GND)

Fig. E41 Filter

3. During STOP mode adjust R7505 on the same board so that the "T" period becomes 28 ± 1msec.

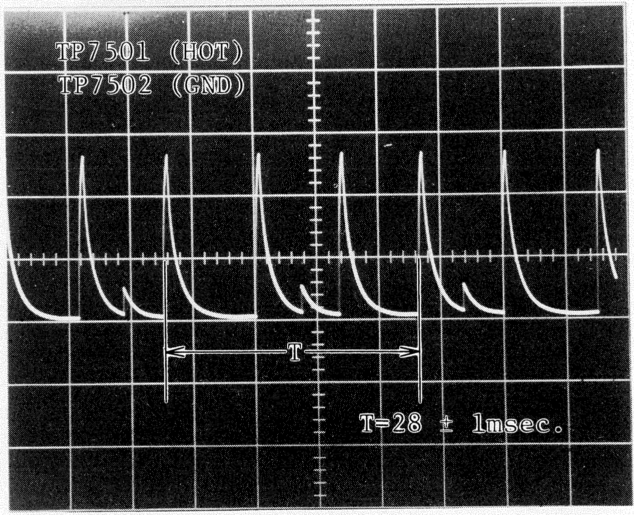
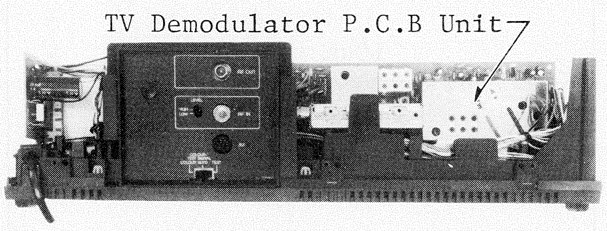
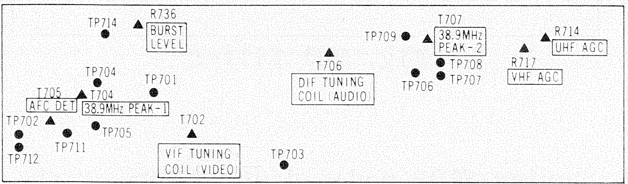


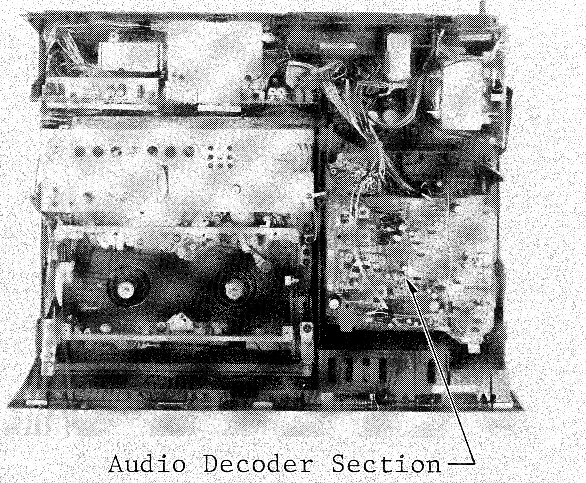
Fig. E42 10mV/5msec.div.

2-7. TV DEMODULATOR & DECODER SECTION

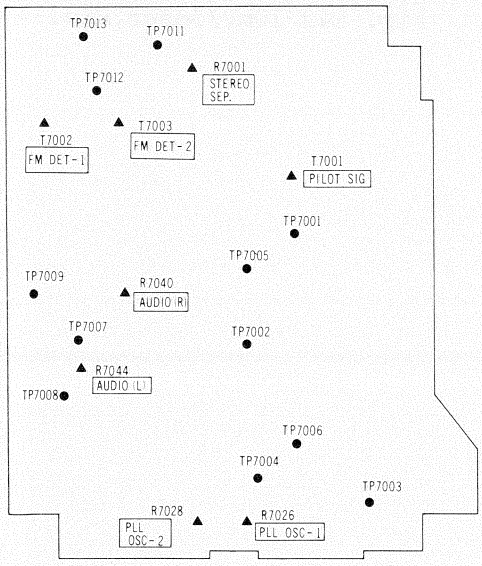

TV Demodulator P.C.B Unit

TV Demodulator P.C.B. Unit


TP714
R736
BURST LEVEL
T707
TP709
38.9MHz PEAK-2
R714
UHF AGC
T706
TP708
TP707
TP706
R717
VHF AGC
DIF TUNING COIL (AUDIO)
TP704
TP701
T705
T704
AFC DET
38.9MHz PEAK-1
TP702
TP705
T702
TP711
TP712
VIF TUNING COIL (VIDEO)
TP703


Audio Decoder Section

Decoder P.C.B. Unit


TP7013
TP7011
R7001
STEREO SEP.
TP7012
T7002
FM DET-1
T7003
FM DET-2
T7001
PILOT SIG
TP7001
TP7005
TP7009
R7040
AUDIO (R)
TP7007
TP7002
R7044
AUDIO (L)
TP7008
TP7006
TP7004
TP7003
R7028
PLL OSC-2
R7026
PLL OSC-1

Test Equipment

To make adjustment completely, following equipment are required.

1. VIF Sweep Generator
   with the Trap Adjuster 38.9MHz
2. SIF Sweep Generator
   ...... 5.5MHz ± 150kHz
3. CW Oscillator ..... 38.9MHz ± 100kHz
4. Digital Volt Meter
5. Oscilloscope
6. DC Power Supply
7. Monitor scope
8. PAL Signal Generator
9. Attenuator
10. Monitor TV
11. Multi Voice Modulator
12. Low Frequency Counter
13. Distortion Meter
14. Noise Meter
15. Resistor (100Ω)
16. BPF (1kHz)

Note: Setting of Multi Voice Modulator

(MPX)
Output .... 75 ± 5dBμ (50Ω, Open)
Video Modulation 87.5%
P/S Ratio P-S1: 13dB
P-S2: 20dB
Audio Modulation .....
S1: 400Hz, 100% (±30kHz)
S2: 1kHz, 100% (±30kHz)
Mode .... Dual, M1 or M2

(STEREO)
Output .... 75 ± 5dBμ (50Ω, Open)
Video Modulation 87.5%
P/S Ratio P-S1: 13dB
P-S2: 20dB
Audio Modulation .....
S1: 400Hz, 100% (±30kHz)
S2: 1kHz, 100% (±30kHz)
Mode .... Dual, L or R

(SINGLE) (Manual Setting)
Output .... 75 ± 5dBμ (50Ω, Open)
Video Modulation 87.5%
Audio Modulation S1, S2: 1kHz
100% → 0%
Mode .... SINGLE, L/R, M1/M2

2-7-1. VIF Sweep Adjustment

Test Point: TP714
(on TV Demodulator Section)
Adjustments: T701, T702, T703
(on TV Demodulator Section)

1. Connect the H-Out of the VIF Sweep Generator to the H-In on the monitor scope.
2. Connect the Marker-Out of the VIF Sweep Generator to the Marker-In or Z-Terminal of the monitor scope.
3. Set the Channel Selector to the VHF High position (VH) and turn the tuning volume so that the voltage at BT terminal of the Tuner becomes 15 ± 1V DC.
4. Connect a jumper wire between TP713 and the GND.
5. Connect the 100Ω resistor between TP704 and TU705.
6. Connect the V-In terminal of the monitor scope to TP714.
7. Supply the output of the VIF Sweep Generator to Test Point of the Tuner.

8. Adjust the output of the VIF Sweep Generator so that the level of VIF waveform becomes 1.0Vp-p.
9. Release 20dB from the attenuator of the Sweep Generator.
10. Connect the DC Power Supply to TP701, and adjust the supply voltage so that the level of the VIF waveform becomes 1.0Vp-p.
11. Adjust T702-(B) so that the attenuation of the 40.4MHz trap becomes minimum.
12. Adjust T701 so that the attenuation of the 32.9MHz trap becomes minimum.
13. Adjust T702-(C) so that the attenuation of the 3.19MHz trap becomes minimum.
14. Adjust T703 so that the attenuation of the 33.4MHz trap becomes minimum.
15. Adjust the Tuner Converter Coil, T702-(A) so that the VIF waveform becomes as shown below.

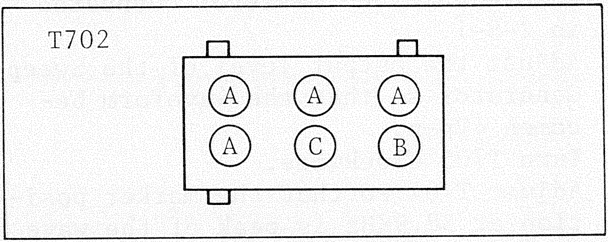

T702
A
A
A
A
C
B

Fig. E45

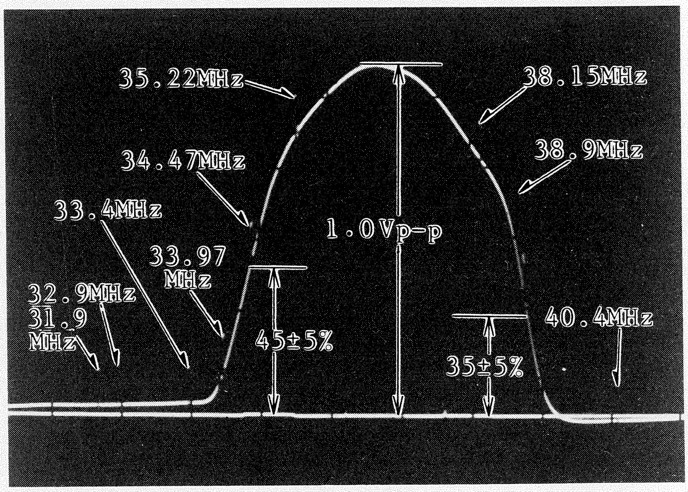


Fig. E46 VIF Waveform

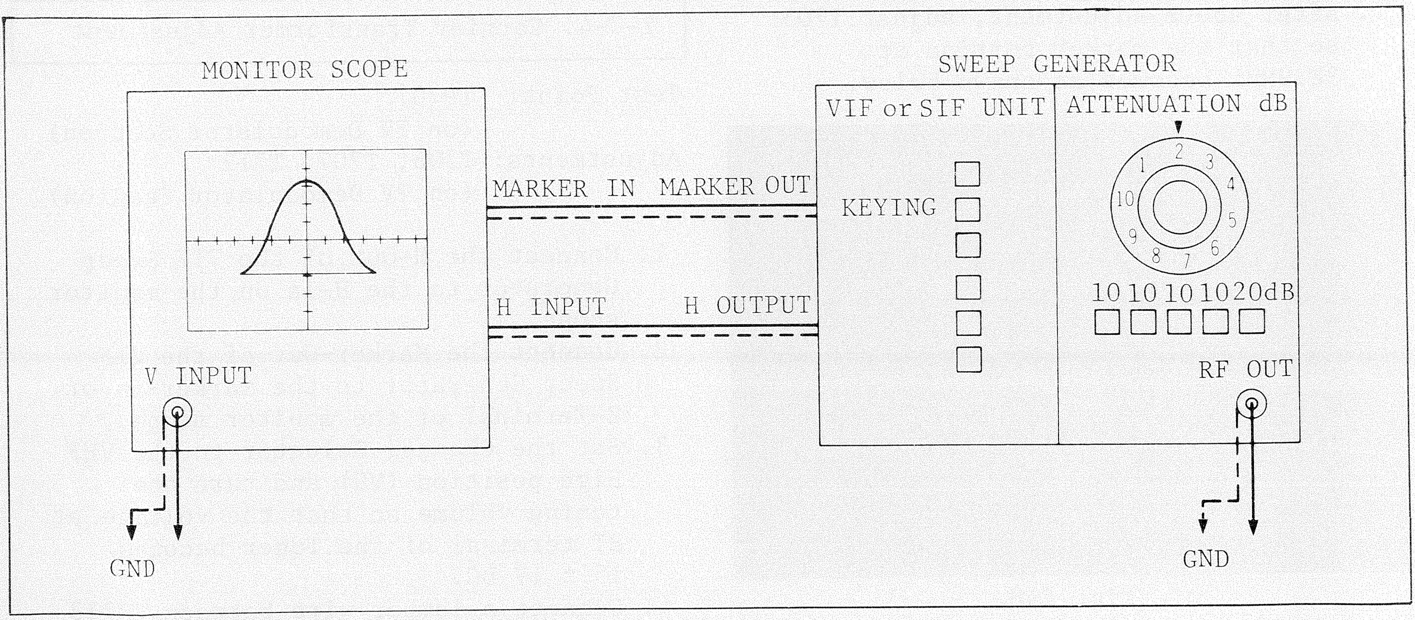

MONITOR SCOPE
MARKER IN
MARKER OUT
H INPUT
H OUTPUT
V INPUT
GND
SWEEP GENERATOR
VIF or SIF UNIT
KEYING
ATTENUATION dB
1
2
3
4
5
6
7
8
9
10
10 10 10 10 20dB
RF OUT
GND

Fig. E44 Connection of Measuring Equipment

2-7-2. Selective Coil Adjustment

Test Point: TP714
(on TV Demodulator Section)
Adjustments: T704, T705
(on TV Demodulator Section)

1. Connection of measuring equipments is same as that in VIF Sweep Adjustment, 2-8-1.
2. Connect the output of the VIF Sweep Generator to TP711.
3. Remove the 100Ω resistor connected in 2-8-1.
4. Adjust the output level of the Sweep Generator so that the waveform becomes 1Vp-p.
5. Turn T705 clockwise.
6. Adjust T704 so that the marker position at 38.9MHz is peak of the wave as shown below.

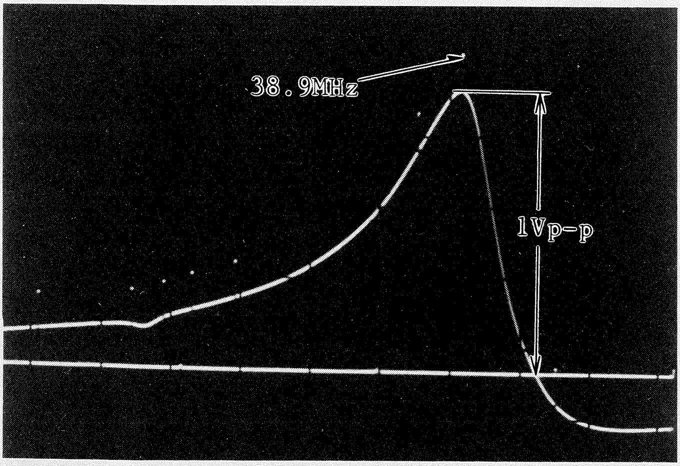


Fig. E47

7. After above adjustment, adjust T705 so that the marker portion at 38.9MHz becomes as shown below.

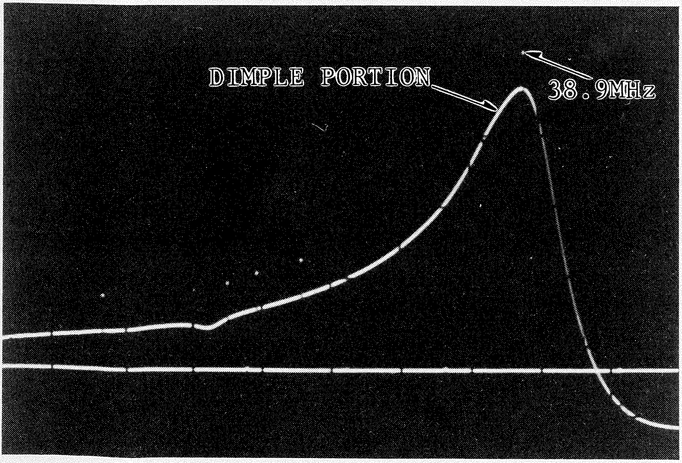


Fig. E48

2-7-3. AFC Adjustment

Test Points: TP703, TP714
(on TV Demodulator Section)
Adjustments: T703, T704
(on TV Demodulator Section)

1. Set the CW oscillator so that the 38.9MHz.
2. Connect the CW oscillator to the Tuner Test Point, and connect the DVM to TP714.
3. Set the Channel Selector to the VHF High Position (VH) and turn the tuner volume so that the voltage at BT terminal of the Tuner becomes 15 ± 1V.
4. Connect the DC Power Supply to TP701, and adjust the supply voltage so that the level is same as that in item 10 of 2-8-1, VIF waveform adjustment.
5. Adjust the output level of CW oscillator so that the indication of the DVM is 7.1V.
6. Connect the DVM to TP703.
7. First read the indication of the DVM in condition that AFC SW is OFF.
8. Next set the AFC SW to ON, and adjust T704 so that the indication of the DVM is that read in item 7 on this section ±0.3V.
9. Change the frequency of the CW oscillator ± 100kHz, centered at 38.9MHz and confirm that the difference of the AFC voltage is more than ±2V.

2-7-4. Carrier Transformer Adjustment

Test Point: TP707
(on TV Demodulator Section)
Adjustments: T706, T707, T712
(on TV Demodulator Section)

1. Connect the H-Out of the VIF Sweep Generator to the H-In on the monitor scope.
2. Connect the Marker-Out of the VIF Sweep Generator to the Marker-In or Z-Terminal of the monitor scope.
3. Set the Channel Selector to the VHF High position (VH) and turn the tuning volume so that the voltage at BT terminal of the Tuner becomes 15 ± 1V DC.
4. Connect a jumper wire between TP713 and the GND.

5. Connect the V-In terminal of the monitor scope to TP707.
6. Supply the output of the VIF Sweep Generator to Test Point of the Tuner.
7. Adjust the output of the VIF Sweep Generator so that the level of VIF waveform becomes 1.0Vp-p.
8. Release 20dB from the attenuator of the Sweep Generator.
9. Connect the DC Power Supply to TP706, and adjust the supply voltage so that the level of the VIF waveform becomes 1.0Vp-p.
10. Adjust T707 so that the marker portion at 38.9MHz is peak of the wave as shown below.

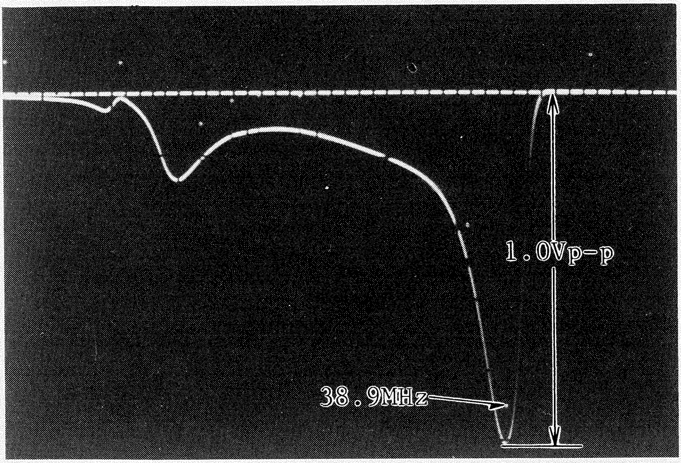


Fig. E49

11. Connect the 100Ω resistor between TP708 and the TP709.
12. Remove the DC Power Supply.
13. Adjust the output of the VIF Sweep Generator so that the level of the Audio VIF waveform becomes 1.0Vp-p.
14. Release 20dB from the attenuator of the Sweep Generator.
15. Connect the DC Power Supply to TP706 and adjust the supply voltage so that the level of the VIF waveform becomes 1.0Vp-p.
16. Adjust T706-(B) so that the attenuation of the 40.4MHz trap becomes minimum.
17. Adjust T706-(C) so that the attenuation of 31.9MHz trap becomes minimum.
18. Adjust T712 so that the trap comes at 33.4MHz portion of the Audio VIF waveform as shown below.
19. Adjust T706-(A) so that the Audio VIF waveform becomes as shown below. (Adjusting, keep 38.15MHz portion away from 38.9MHz portion of the wave as far as possible.)

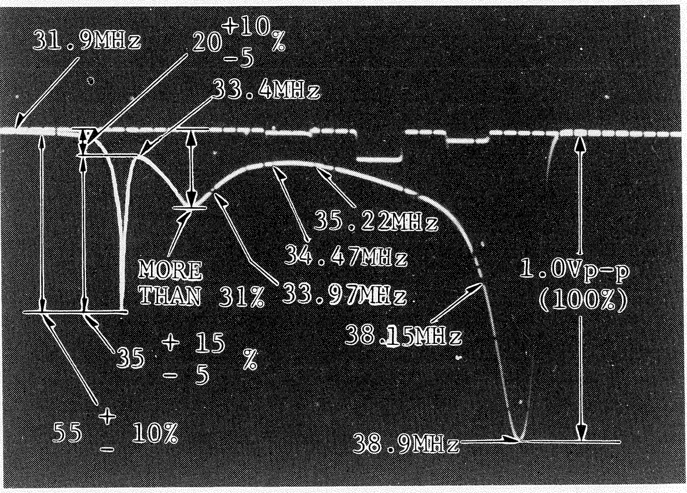


Fig. E50

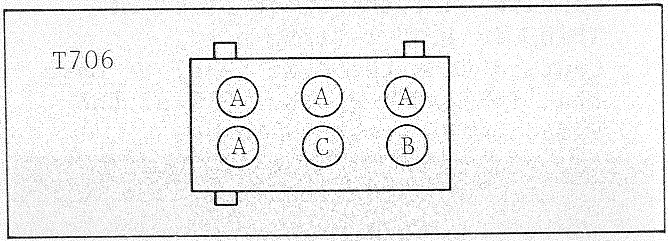


Fig. E51

2-7-5. V/U RF AGC Adjustment

Test Point: TP713
(on TV Demodulator Section)
Adjustments: R714 (UHF AGC VR)
R717 (VHF AGC VR)
(on TV Demodulator Section)

1. Set the Level Switch of the Antenna Booster to high position.
2. Tune in the VHF RF Colour Bar signal.
3. Set the Input Electric Field to 67 ± 2dB (75Ω Open).
4. Connect the DVM to TP713.
5. Adjust R717 (VHF AGC VR) to falling edge of indication of the DVM.
6. Strengthen the Input Electric Field by 3dB to 70dB by the attenuator, and confirm that indication of the DVM changes more than 0.3V.
7. Tune in the UHF RF Colour Bar signal.
8. Set the Input Electric Field to 63 ± 2dB (75Ω Open).
9. Adjust R714 (UHF AGC VR) to falling edge of indication of the DVM at TP713.
10. Strengthen the Input Electric Field by 3dB to 66dB by the attenuator, and confirm that indication of the DVM changes more than 0.3V.

2-7-6. Adjustment of Burst Level, and Confirmation of Video Level and Sync Level

Test Point: TP702
(on TV Demodulator Section)
Adjustment: R736
(on TV Demodulator Section)

1. Set the Level Switch of the Antenna Booster to High Position.
2. Tune in the VHF RF Colour Bar signal.
3. Connect the oscilloscope to TP702.
4. Adjust R736 so that the Burst Level becomes 240mV ± 10mVp-p.
5. Confirm that the Video Level at TP702 is 1.0V ± 0.2Vp-p.
6. Confirm that the Sync Level is more than 26% and less than 31% of the Video Level as shown below.

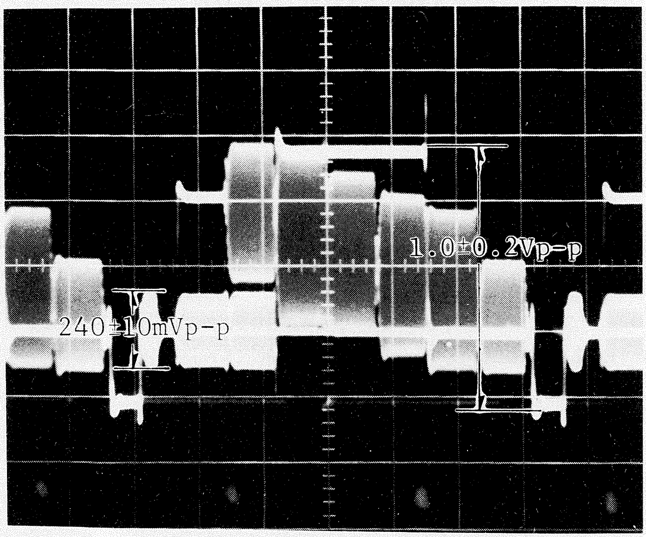


Fig. E52 200mV/10μsec. div.

2-7-7. PLL Oscillation Frequency Adjustment

Test Points: TP7003, TP7004
(on Decoder Section)
Adjustments: R7026, R7028
(on Decoder Section)

1. Don't supply any RF signal to RF Input of the Antenna Booster.
2. Set the AFC switch to "OFF".
3. Connect a jumper wire between TP7006 and the GND.
4. Connect the Low Frequency Counter to TP7003.
5. Adjust R7026 so that indication of the LF Counter is 235.0 ± 2.0Hz.
6. Connect the LF Counter to TP7004.
7. Adjust R7028 so that indication of the LF Counter is 548.2 ± 2.0Hz.

2-7-8. Pre-Adjustment of FM Detection Transformer

Test Points: TP7011, TP7013
(on Decoder Section)
Adjustments: T7002, T7003
(on Decoder Section)

1. Supply a Colour Video Signal to Input of the Multi Voice Modulator.
2. Connect Output of the Multi Voice Modulator (MPX) to RF Input of the Antenna Booster.
3. Set the AFC Switch to "ON", and place the Level Switch on the Antenna Booster to "High" position.
4. Tune in Output of the Multi Voice Modulator and place the Mode Selection Switch to "CH1+2" position.
5. Connect the oscilloscope to TP7013.
6. Adjust T7002 so that the Output Level indicated on the oscilloscope becomes maximum, more than 600mVp-p.
7. Connect the oscilloscope to TP7011.
8. Adjust T7003 so that level of the waveform indicated on the oscilloscope becomes maximum, more than 600mVp-p.

2-7-9. STEREO Separation Adjustment

Test Point: TP7008 (on Decoder Section)
Adjustment: R7001 (on Decoder Section)

1. Supply a Colour Video Signal to Input of the Multi Voice Modulator.
2. Connect Output of the Multi Voice Modulator (STEREO) to RF Input of the Antenna Booster.
3. Set the AFC Switch to "ON", and place the Level Switch on the Antenna Booster to "High" position.
4. Tune in Output of the Multi Voice Modulator and place the Mode Selection Switch to "CH1+2" position.
5. Connect the Noise Meter to TP7008 through the BPF (1kHz).
6. Adjust R7001 so that the indication of the Noise Meter becomes minimum.

Note:

After this adjustment, re-adjust FM Detection Transformer (2-7-10) and Audio Output Level (2-7-12).

2-7-10. Adjustment of FM Detection Transformer

Test Points: TP7008, TP7009, TP7011,
TP7013 (on Decoder Section)
Adjustments: T7002, T7003
(on Decoder Section)

1. Supply a Colour Video Signal to Input of the Multi Voice Modulator.
2. Connect Output of the Multi Voice Modulator (MPX) to RF Input of the Antenna Booster.
3. Set the AFC Switch to "ON", and place the Level Switch on the Antenna Booster to "High" position.
4. Tune in Output of the Multi Voice Modulator and place the Mode Selection Switch to "CH1+2" position.
5. Connect the Oscilloscope to TP7013 and connect the distortion meter to TP7008.
6. Adjust T7002 so that level of the waveform becomes Maximum (More than 600mVp-p) and distortion of the waveform becomes minimum (Less than 0.6%).
7. Connect the oscilloscope to TP7011 and connect the distortion meter to TP7009.
8. Adjust T7003 so that level of the waveform becomes maximum (More than 600mVp-p) and distortion of the waveform becomes minimum (Less than 1.0%).

Note:
After this adjustment, re-adjust Audio Output Level (2-7-12).

2-7-11. Adjustment of Pilot Signal Transformer

Test Point: TP7005 (on Decoder Section)
Adjustment: T7001 (on Decoder Section)

1. Supply a Colour Video Signal to Input of the Multi Voice Modulator.
2. Connect Output of the Multi Voice Modulator (MPX) to RF Input of the Antenna Booster.
3. Set the AFC Switch to "ON", and place the Level Switch on the Antenna Booster to "High" position.
4. Tune in Output of the Multi Voice Modulator and place the Mode Selection Switch to "CH1+2" position.
5. Connect the Oscilloscope to TP7005.
6. Adjust T7001 so that level of the waveform becomes maximum and DC level of the waveform becomes maximum too.

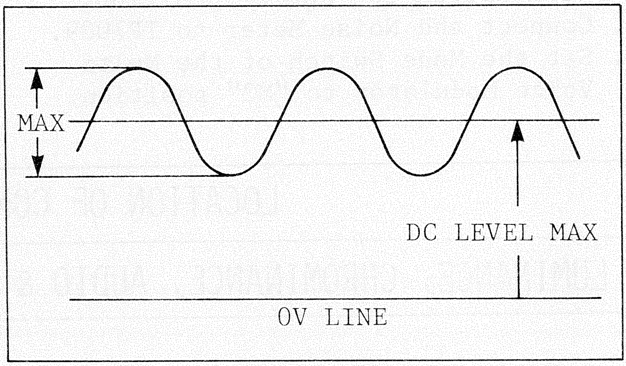


Fig. E53

2-7-12. Audio Output Level Adjustment

Test Points: TP7008, TP7009
(on Decoder Section)
Adjustments: R7044, R7040
(on Decoder Section)

1. Supply a Colour Video Signal to Input of the Multi Voice Modulator.
2. Connect Output of the Multi Voice Modulator (STEREO) to RF Input of the Antenna Booster.
3. Set the AFC Switch to "ON", and place the Level Switch on the Antenna Booster to "High" position.
4. Tune in Output of the Multi Voice Modulator and place the Mode Selection Switch to "CH1+2" position.
5. Connect the Noise Meter to TP7008.
6. Adjust R7044 so that indication of the Noise Meter becomes 100 ± 5 mVrms.
7. Connect the Noise Meter to TP7009.
8. Adjust R7040 so that the indication of the Noise Meter becomes 100 ± 5 mVrms.

2-7-13. Buzz Adjustment

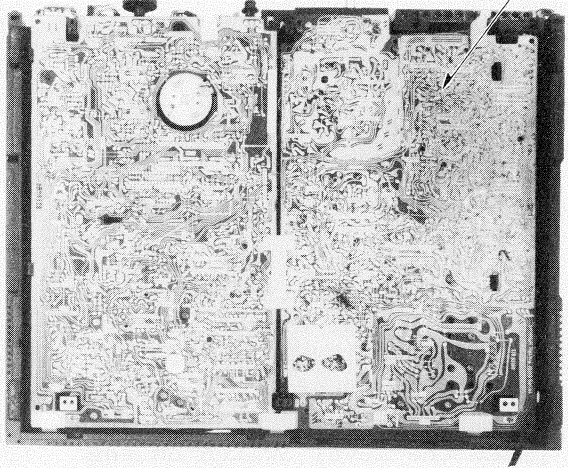
Test Point: TP7009 (on Decoder Section)
Adjustment: T7007
(on TV Demodulator Section)

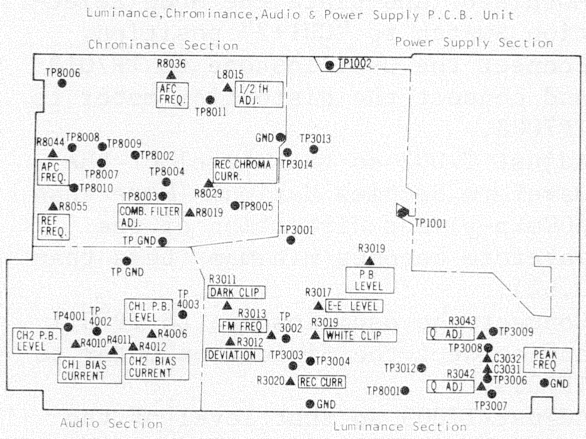
1. Supply a Colour Video Signal to Input of the Multi Voice Modulator.
2. Connect Output of the Multi Voice Modulator (SINGLE) to RF Input of the Antenna Booster.

3. Set the AFC Switch to "ON", and place the Level Switch to "High" position.
4. Tune in Output of the Multi Voice Modulator and place the Mode Selection Switch to "CH1+2" position.
5. Connect the Noise Meter to TP7009.
6. Set the Mode Switch of the Multi Voice Modulator to "M2" position.
7. Set the Audio Modulation of the Multi Voice Modulator to 0% (OFF).
8. Adjust T707 so that the indication of the Noise Meter becomes minimum.
9. Confirm that difference of the noise level between two conditions, audio modulation is 100% (ON), audio modulation 0% (OFF), is more than 58dB.

LOCATION OF CONTROLS & TEST POINTS

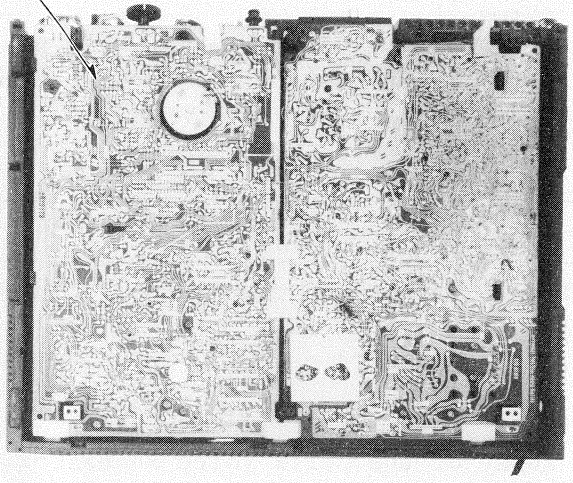
LUMINANCE, CHROMINANCE, AUDIO & POWER SUPPLY P.C.B UNIT (VEP03169B)

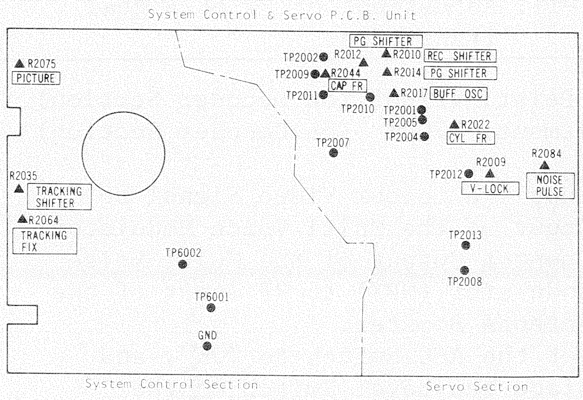

Luminance, Chrominance, Audio & Power Supply P.C.B Unit


Luminance,Chrominance,Audio & Power Supply P.C.B. Unit
Chrominance Section
Power Supply Section
TP8006
R8036
AFC FREQ.
L8015
1/2 fH ADJ.
TP8011
TP1002
R8044
TP8008
TP8009
TP8002
APC FREQ.
TP8007
TP8004
TP8010
GND
TP3013
TP3014
REC CHROMA CURR.
R8029
TP8003
R8055
REF FREQ.
COMB. FILTER ADJ.
R8019
TP8005
TP3001
TP1001
TP GND
TP GND
R3019
P.B LEVEL
R3011
DARK CLIP
R3017
E-E LEVEL
TP4001
TP 4002
CH1 P.B. LEVEL
TP 4003
R3013
FM FREQ
TP 3002
R3019
WHITE CLIP
R3043
Q ADJ
TP3009
CH2 P.B. LEVEL
R4010
R4011
R4006
R4012
R3012
DEVIATION
TP3003
TP3004
TP3008
C3032
C3031
PEAK FREQ
CH1 BIAS CURRENT
CH2 BIAS CURRENT
R3020
REC CURR
TP3012
R3042
Q ADJ
TP3006
GND
TP8001
GND
TP3007
Audio Section
Luminance Section

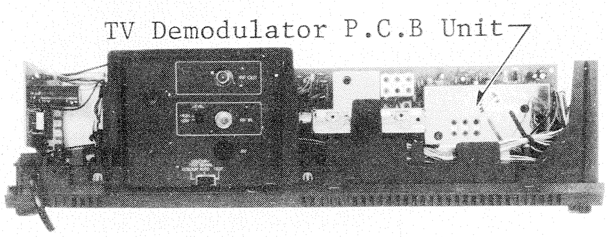
SERVO & SYSTEM CONTROL P.C.B UNIT (VEP02167A)

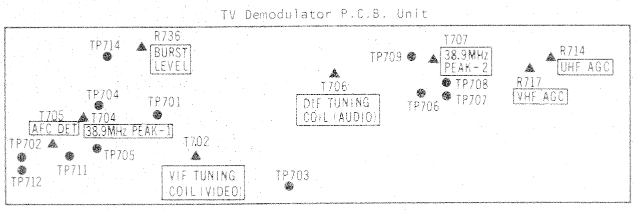
Servo & System Control P.C.B Unit



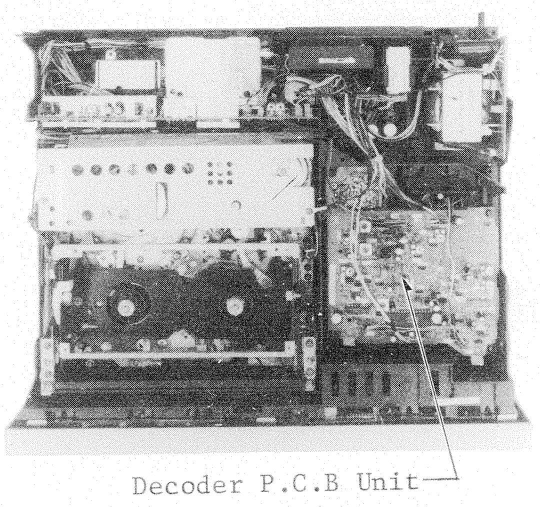

System Control & Servo P.C.B. Unit
PG SHIFTER
R2075
PICTURE
TP2002
R2012
R2010
REC SHIFTER
TP2009
R2044
R2014
PG SHIFTER
CAP FR
TP2011
R2017
BUFF OSC
TP2010
TP2001
TP2005
R2022
TP2004
CYL FR
TP2007
R2084
R2009
R2035
TP2012
TRACKING SHIFTER
V-LOCK
NOISE PULSE
R2064
TRACKING FIX
TP2013
TP6002
TP2008
TP6001
GND
System Control Section
Servo Section

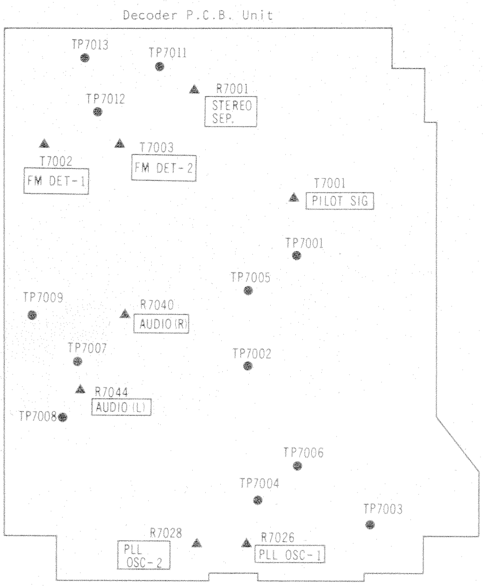
TV DEMODULATOR P.C.B UNIT (VEP07156A)


TV Demodulator P.C.B Unit

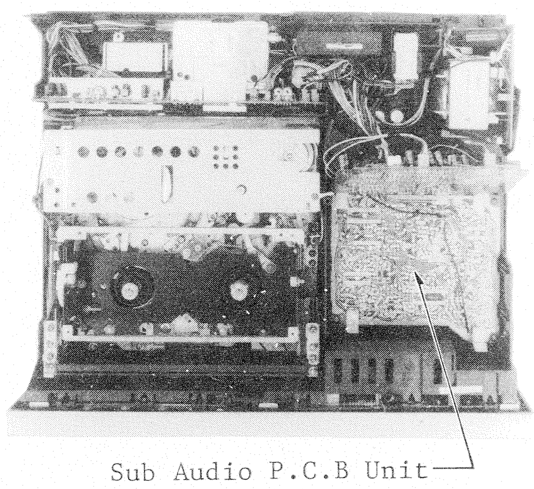

TV Demodulator P.C.B. Unit
TP714
R736
BURST LEVEL
TP709
T707
38.9MHz PEAK-2
R714
UHF AGC
T706
DIF TUNING COIL (AUDIO)
TP708
TP707
R717
VHF AGC
TP706
TP704
TP701
T705
AFC DET
T704
38.9MHz PEAK-1
TP702
TP705
T702
TP711
TP712
VIF TUNING COIL (VIDEO)
TP703

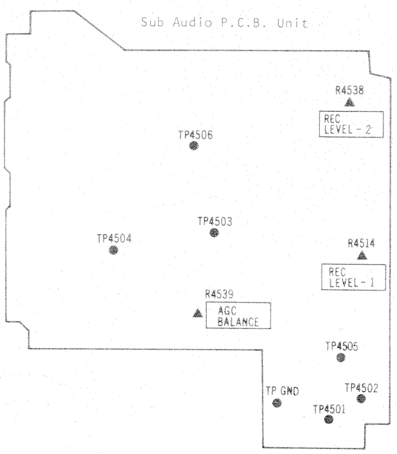
DECODER P.C.B UNIT (VEP07157A)


Decoder P.C.B Unit


Decoder P.C.B. Unit
TP7013
TP7011
R7001
STEREO SEP.
TP7012
T7002
FM DET-1
T7003
FM DET-2
T7001
PILOT SIG
TP7001
TP7005
TP7009
R7040
AUDIO (R)
TP7007
TP7002
R7044
AUDIO (L)
TP7008
TP7006
TP7004
TP7003
R7028
PLL OSC-2
R7026
PLL OSC-1

SUB AUDIO P.C.B UNIT (VEP04089B)


Sub Audio P.C.B Unit


Sub Audio P.C.B. Unit
R4538
REC LEVEL-2
TP4506
TP4503
TP4504
R4514
REC LEVEL-1
R4539
AGC BALANCE
TP4505
TP GND
TP4502
TP4501

ORDER NO. VRD-8301-354

Service Manual

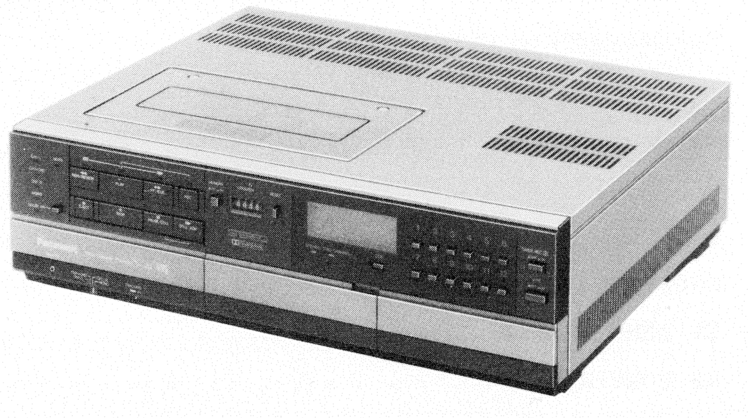
Video Cassette Recorder

Panasonic VHS

NV-332-EG

Vol. 3

Block Diagrams
Schematic Diagrams



SPECIFICATIONS

Power Source: 220V AC 50/60Hz
Power Consumption: Approx. 36 watts
Television System: CCIR: 625 lines, 50 fields
PAL/DDR SECAM colour signal
Video Recording System: 2 rotary heads, helical scanning system
Luminance: FM azimuth recording
Colour signal: converted subscarrier phase shift recording
Audio Track: 1 track
Tape Format: Tape width 12.7mm high density tape
Tape Speed: 23.39mm/s
Record/Playback Time: 240 min. with NV-E240
FF/REW Time: Less than 6.5 min. with NV-E240
Heads: Video: 2 rotary heads
Audio/Control: 1 stationary head
Erase: 1 full track erase
Input Level: Video: VIDEO IN connector (BNC)
1.0Vp-p, 75Ω terminate
AV (ADIN45482)
1.0Vp-p, 75Ω terminated
Audio: LINE IN jack (RCA)
More than −20dB, more than 50kΩ (Monaral)
AV (DIN45482)
more than −10dB, more than 10kΩ

Output Level: Video: VIDEO OUT connector (BNC)
1.0Vp-p, 75Ω terminate
AV (DIN45482)
1.0Vp-p, 75Ω terminate
Audio: LINE OUT jack (RCA)
−6dB, less than 1kΩ
AV (DIN45482)
−6dB, less than 1kΩ
RF Modulated: UHF channel 36 ± 4CH
75Ω terminate
Weight: 8.6kg
Dimensions: 430(W) × 125(H) × 358(D)mm
Accessory Supplied: 1 pc. DIN-RF Cable VJA0130
Optional Accessories: Video cassette tape:
NV-E240 Approx. 344m, 240 min.
NV-E180 Approx. 258m, 180 min.
NV-E120 Approx. 174m, 120 min.
NV-E60 Approx. 88m, 60 min.
Wired Remote Control Unit, NV-A33
Video Camera, WV-2600E,
WV-3000E, WV-3200E

Weight and dimensions shown are apparoximate.
Specifications are subject to change without notice.

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

CONTENTS

SPECIFICATIONS . . . . Cover

BLOCK DIAGRAMS 3- 1

  STILL ADVANCE 3- 1

  ARTIFICIAL V. STNC 3- 1

  CAPSTAN SERVO 3- 2

  CYLINDER SERVO 3- 3

  LUMINANCE PROCESS 3- 4

  CHROMINANCE PROCESS 3- 5

  SYSTEM CONTROL 3- 6

  MICRO PROCESSOR MODE BY MODE TIMING CHART 3- 7

  SUB AUDIO 3- 8

  DECODER 3- 9

  PROGRAMMABLE TIMER 3-10

  TV DEMODULATOR 3-11

  RF CONVERTER 3-12

SCHEMATIC & CIRCUIT BOARD DIAGRAMS 3-12

  POWER SUPPLY 3-12

  AUDIO 3-13

  LUMINANCE & CHROMINANCE 3-15

  SYSTEM CONTROL 3-16

  SERVO 3-17

  OPERATION 3-18

  DECODER 3-19

  SUB-AUDIO 3-20

  TIMER & CH SELECT 3-22

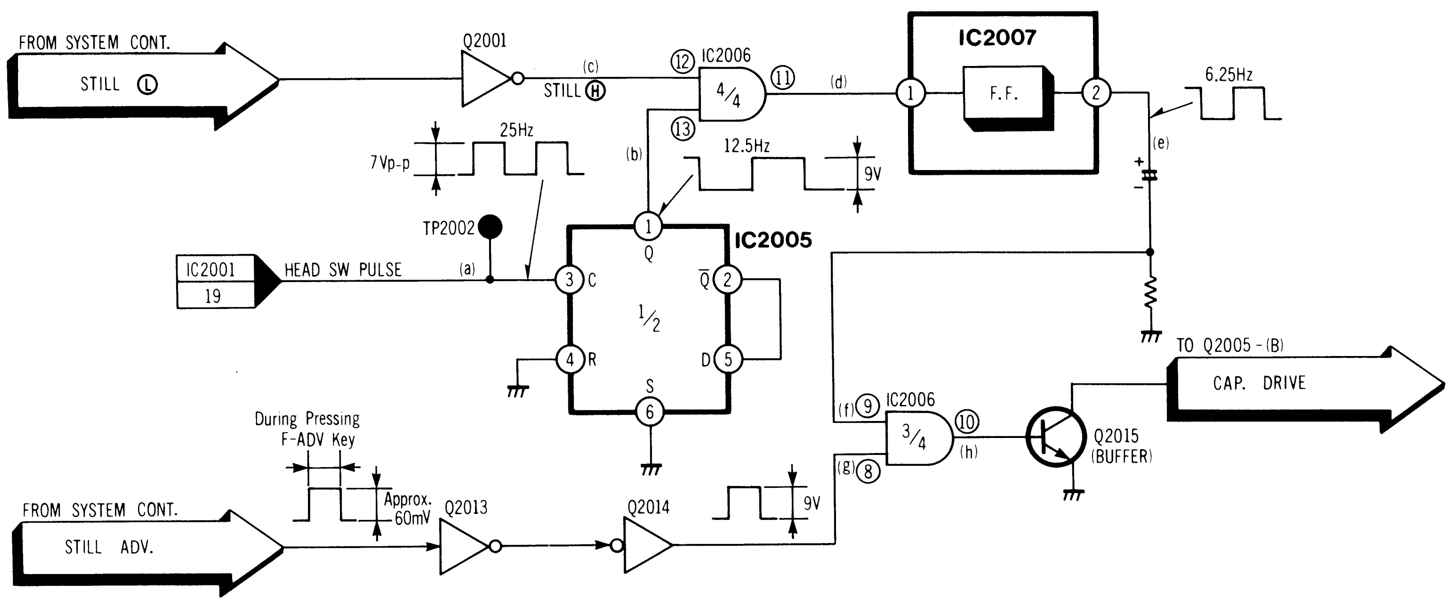
  TV DEMODULATOR 3-24

  RF CONVERTER 3-26

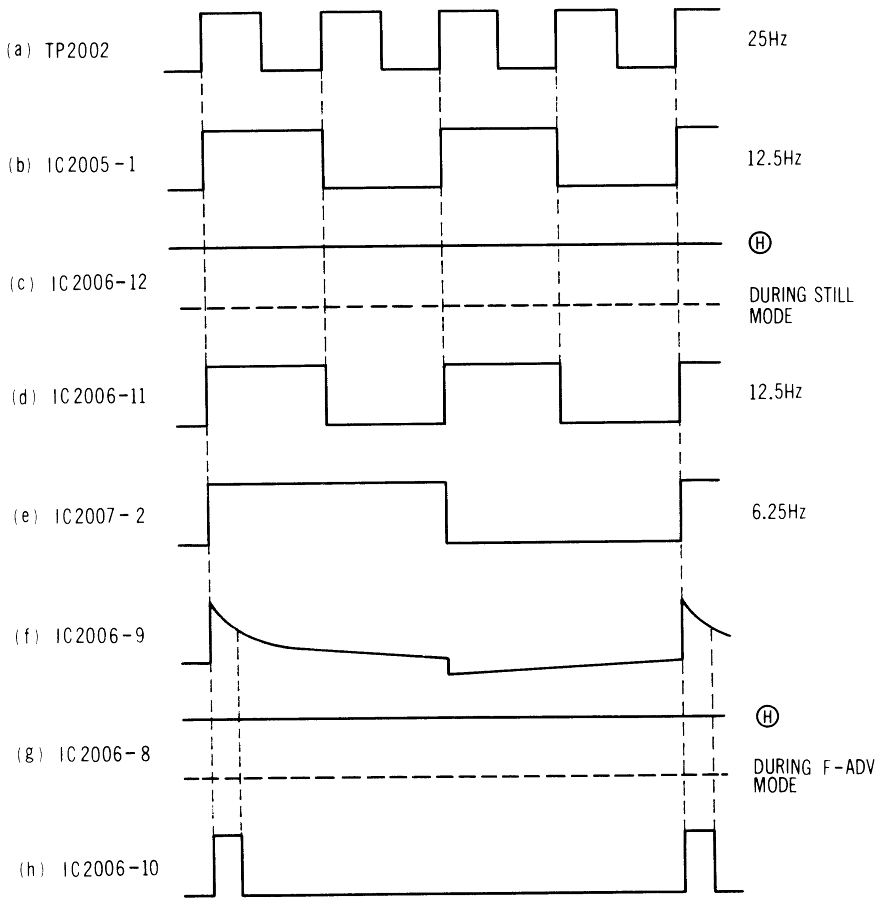
  CIRCUIT BOARD LAYOUT 3-28

  INTERCONNECTION SCHEMATIC DIAGRAM 3-29

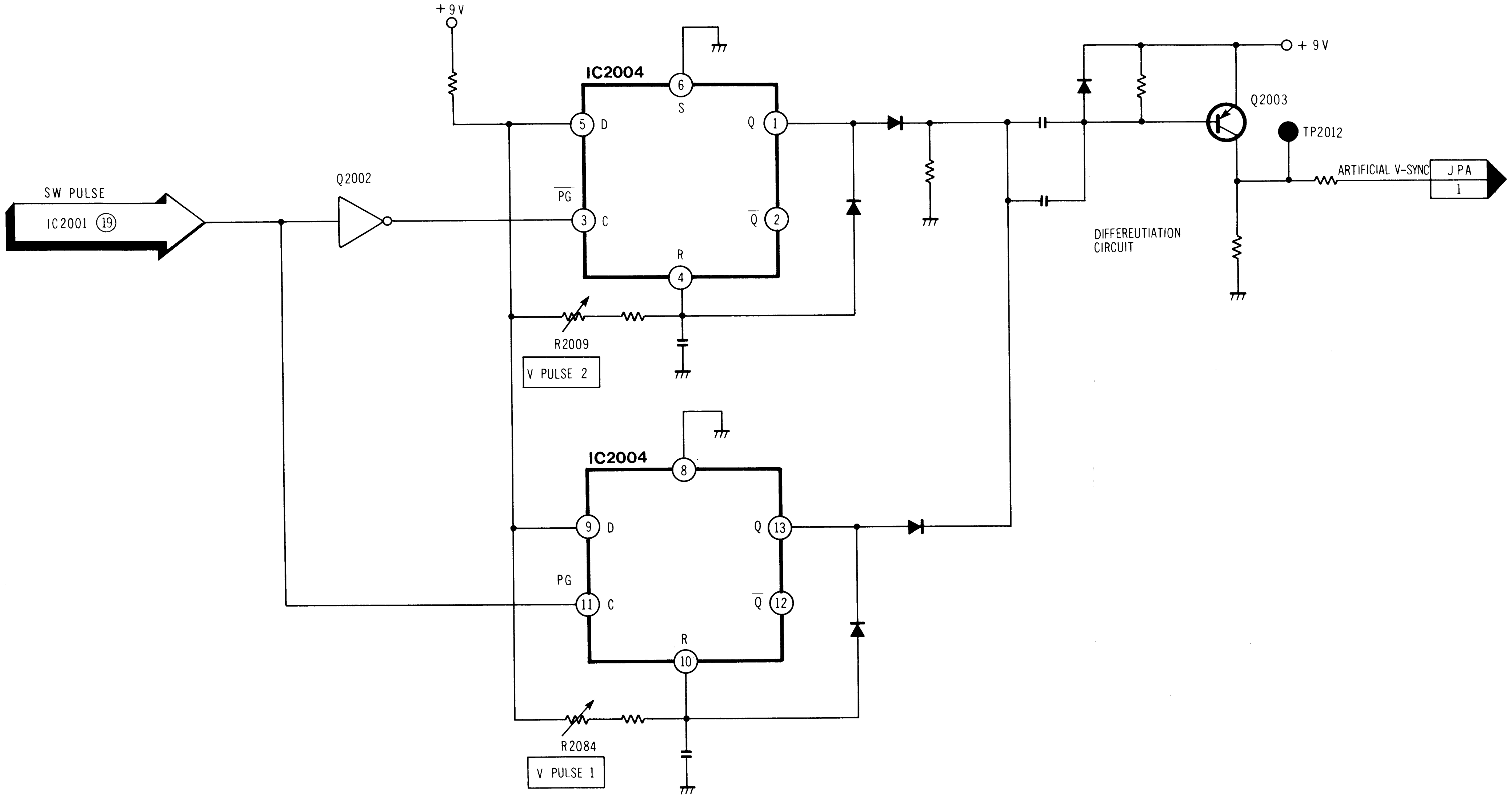
STILL ADVANCE BLOCK DIAGRAM


FROM SYSTEM CONT.
STILL Ⓛ
Q2001
(c)
STILL Ⓗ
⑫ IC2006
4/4
⑪
(d)
⑬
IC2007
F.F.
①
②
6.25Hz
(e)
25Hz
7Vp-p
(b)
12.5Hz
9V
TP2002
IC2005
Q
1/2
IC2001
19
HEAD SW PULSE
(a)
C
R
D
S
TO Q2005-(B)
CAP. DRIVE
(f) ⑨ IC2006
3/4
⑩
(h)
(g) ⑧
Q2015
(BUFFER)
During Pressing
F-ADV Key
Approx.
60mV
Q2013
Q2014
9V
FROM SYSTEM CONT.
STILL ADV.

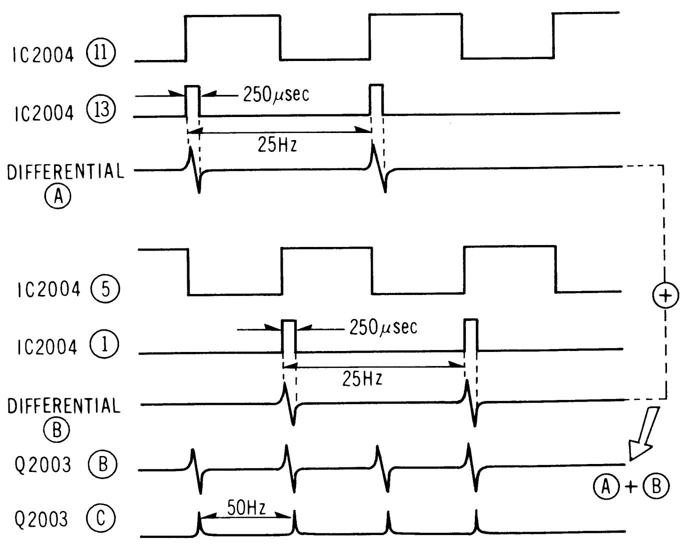
STILL ADVANCE TIMING CHART



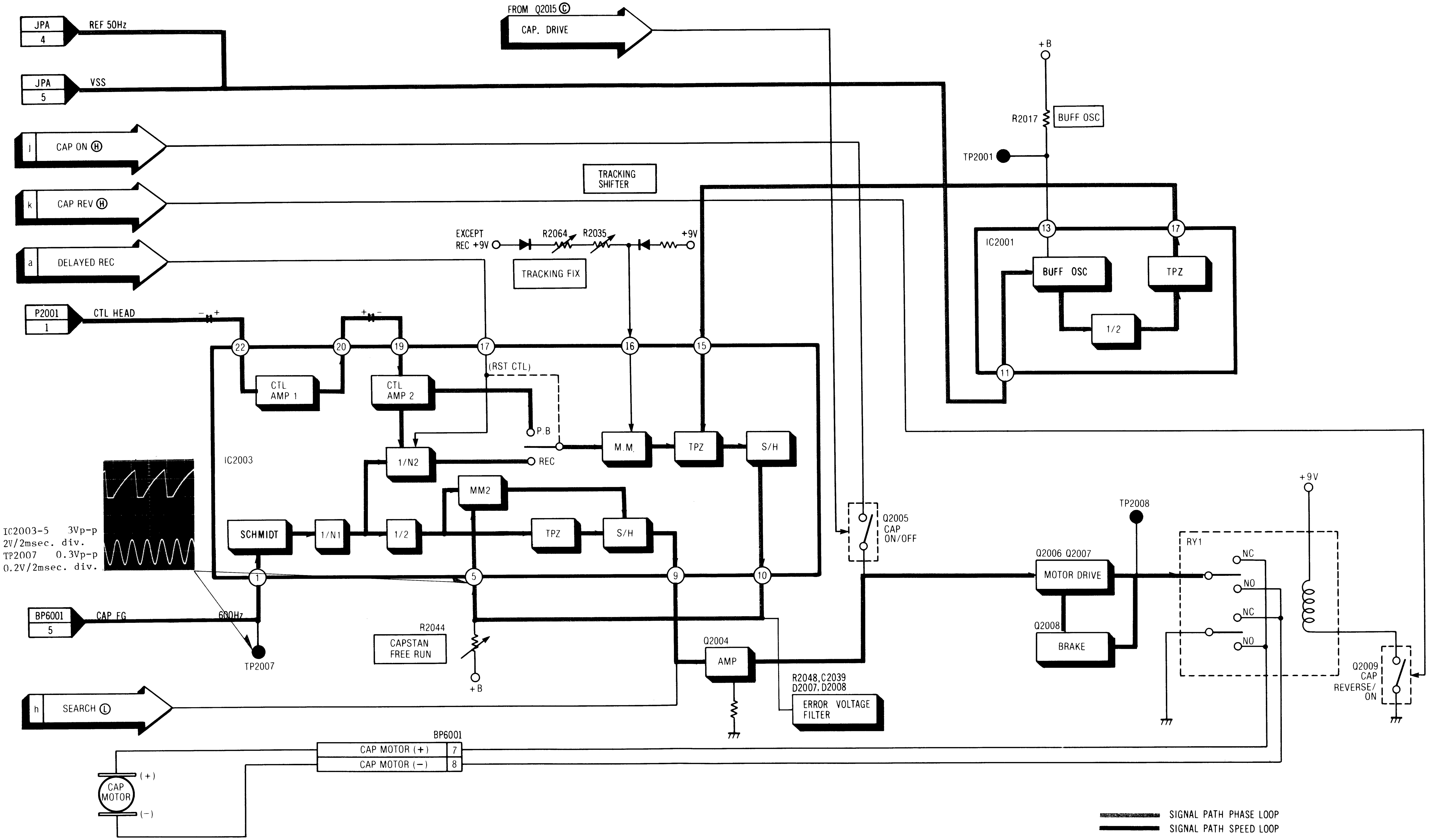
ARTIFICIAL V-SYNC BLOCK DIAGRAM


+9V
IC2004
6
S
5 D
Q 1
PG
3 C
Q̄ 2
R
4
SW PULSE
IC2001 ⑲
Q2002
R2009
V PULSE 2
IC2004
8
9 D
Q 13
PG
11 C
Q̄ 12
R
10
R2084
V PULSE 1
+9V
Q2003
TP2012
ARTIFICIAL V-SYNC
J PA
1
DIFFEREUTIATION CIRCUIT

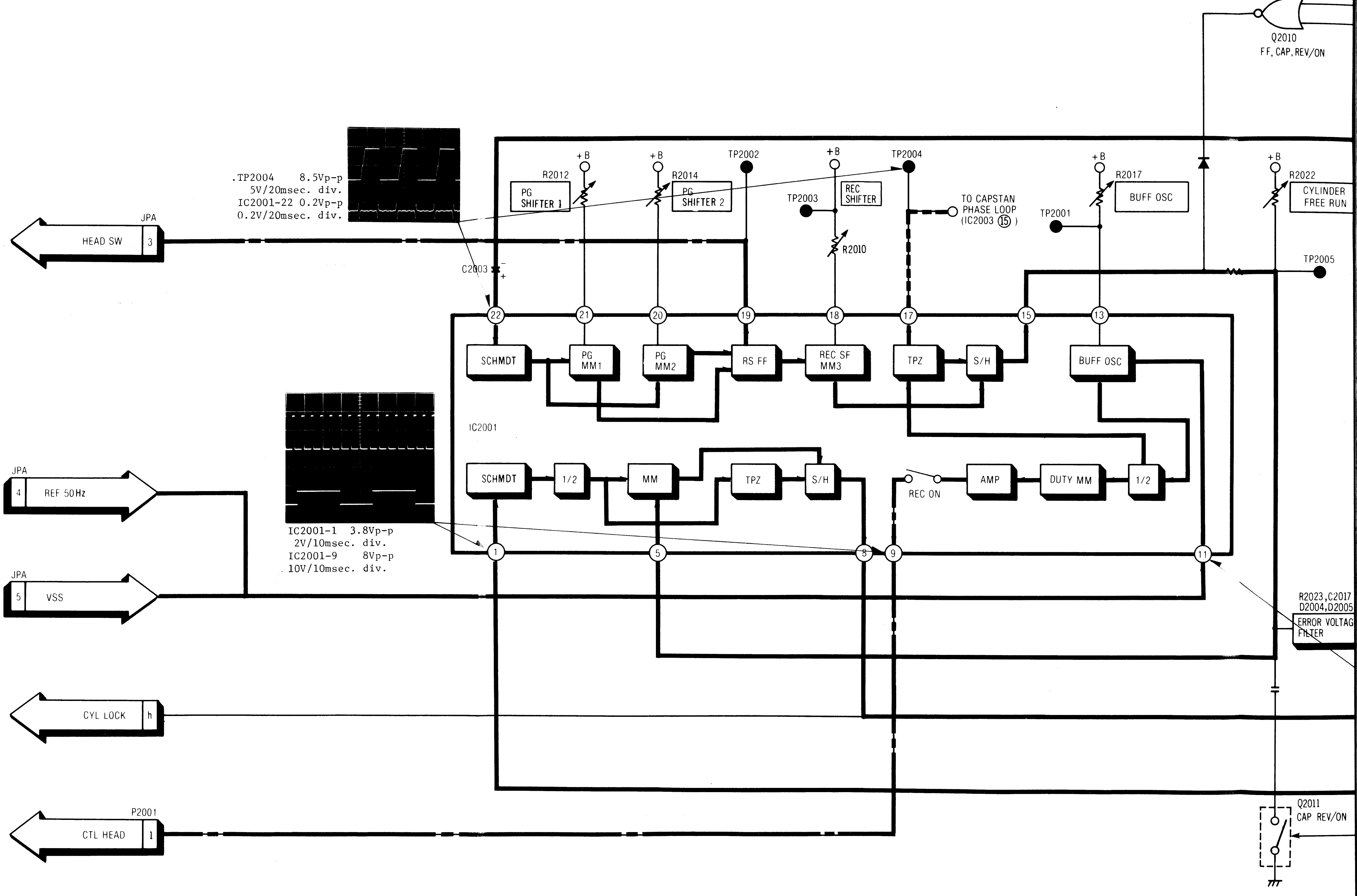
ARTIFICIAL V-SYNC TIMING CHART

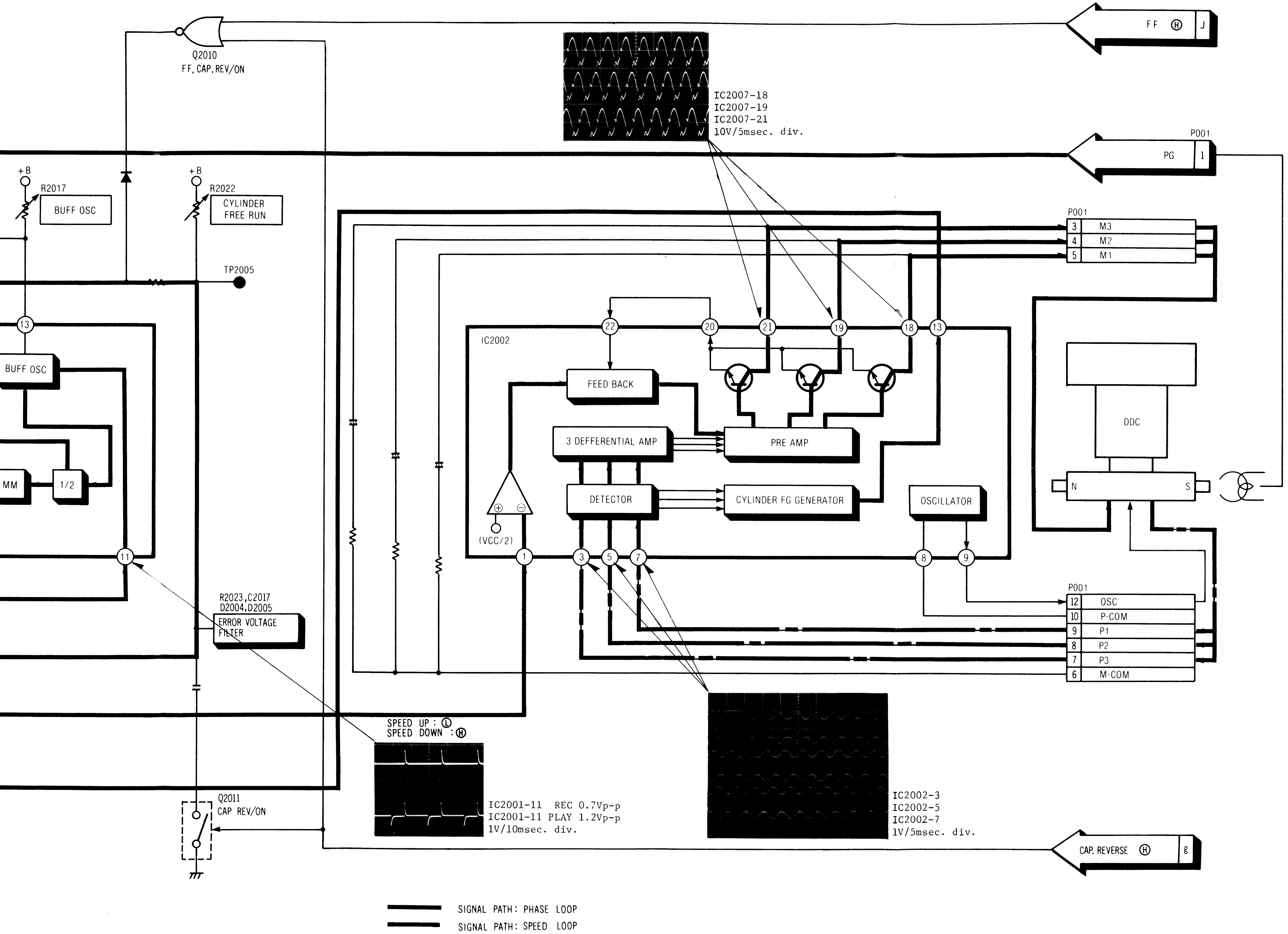


CAPSTAN SERVO BLOCK DIAGRAM

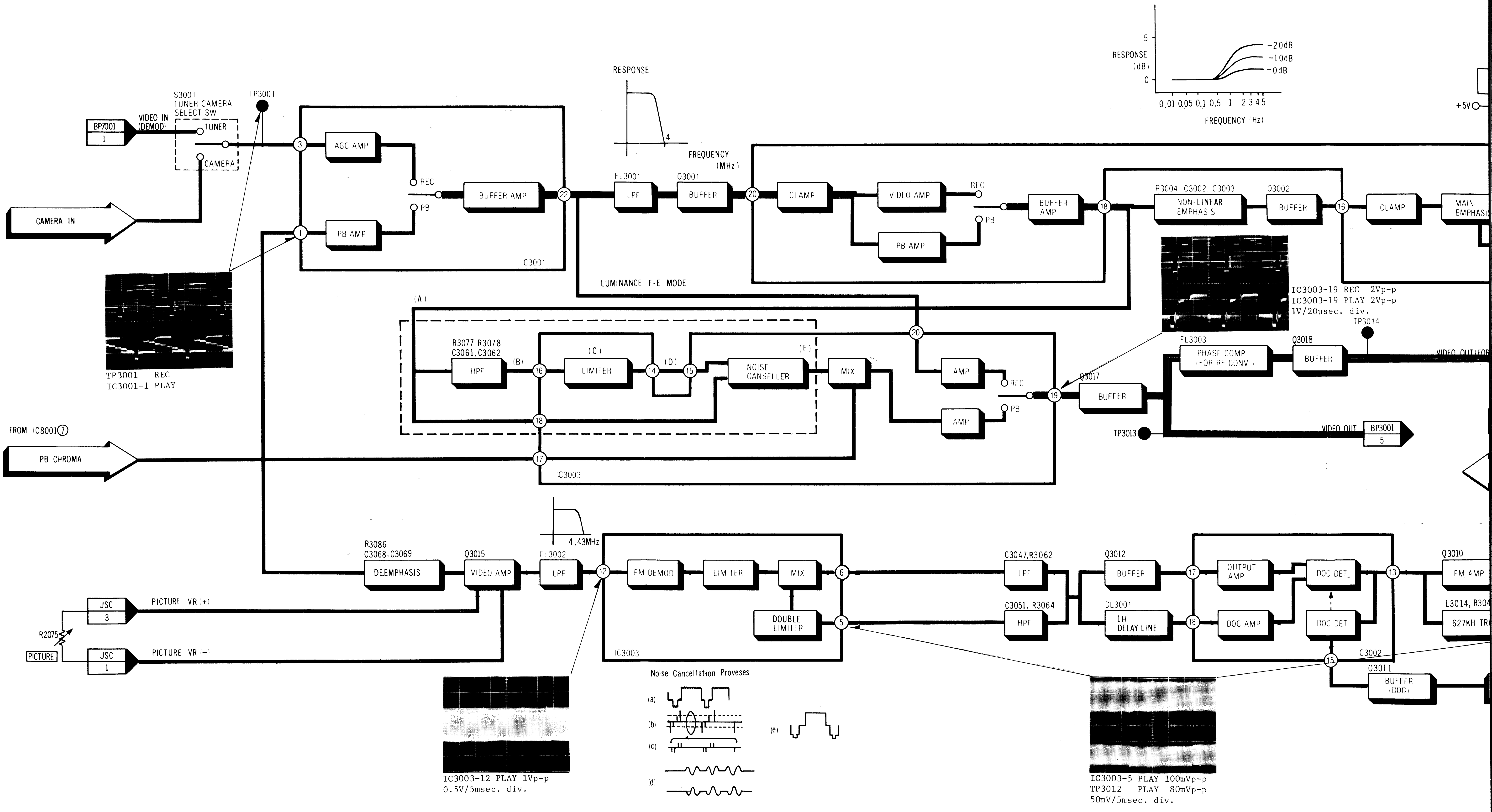

JPA 4
REF 50Hz
JPA 5
VSS
j CAP ON Ⓗ
k CAP REV Ⓗ
a DELAYED REC
P2001 1
CTL HEAD
FROM Q2015 Ⓒ
CAP. DRIVE
TRACKING SHIFTER
EXCEPT REC +9V
R2064
R2035
+9V
TRACKING FIX
22
20
19
17
16
15
CTL AMP 1
CTL AMP 2
(RST CTL)
P.B
REC
M.M.
TPZ
S/H
1/N2
IC2003
MM2
SCHMIDT
1/N1
1/2
TPZ
S/H
1
5
9
10
IC2003-5 3Vp-p 2V/2msec. div.
TP2007 0.3Vp-p 0.2V/2msec. div.
BP6001 5
CAP FG
600Hz
TP2007
R2044
CAPSTAN FREE RUN
+B
Q2004
AMP
R2048, C2039 D2007, D2008
ERROR VOLTAGE FILTER
h SEARCH Ⓛ
BP6001
CAP MOTOR (+) 7
CAP MOTOR (−) 8
CAP MOTOR
(+)
(−)
+B
R2017
BUFF OSC
TP2001
IC2001
13
17
BUFF OSC
TPZ
1/2
11
Q2005 CAP ON/OFF
TP2008
Q2006 Q2007
MOTOR DRIVE
Q2008
BRAKE
RY1
NC
NO
NC
NO
+9V
Q2009 CAP REVERSE/ ON
SIGNAL PATH PHASE LOOP
SIGNAL PATH SPEED LOOP

CYLINDER SERVO BLOCK DIAGRAM

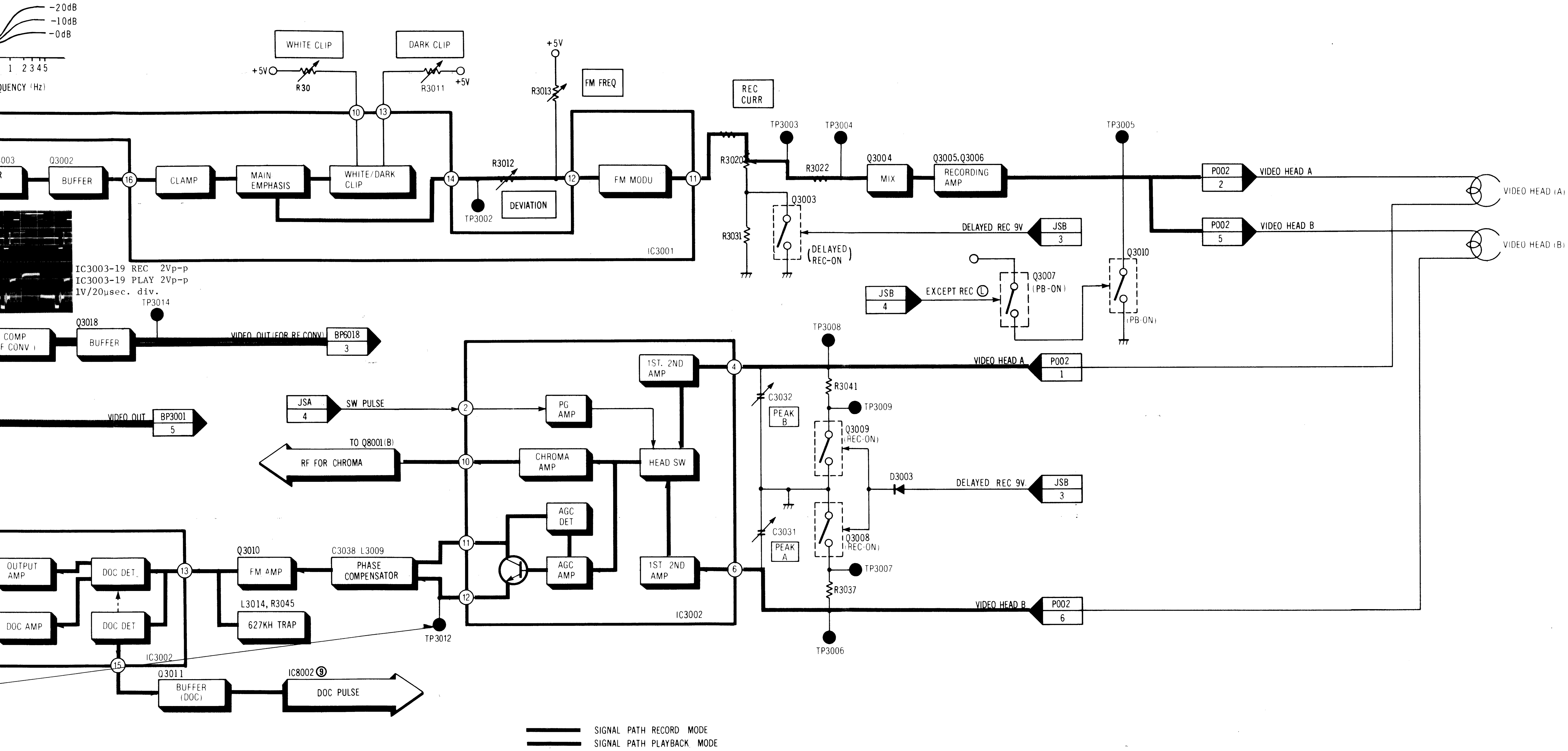

.TP2004 8.5Vp-p
5V/20msec. div.
IC2001-22 0.2Vp-p
0.2V/20msec. div.
IC2001-1 3.8Vp-p
2V/10msec. div.
IC2001-9 8Vp-p
10V/10msec. div.
JPA
HEAD SW
3
JPA
4
REF 50Hz
JPA
5
VSS
CYL LOCK
h
P2001
CTL HEAD
1
Q2010
FF, CAP, REV/ON
+B
R2012
PG SHIFTER 1
+B
R2014
PG SHIFTER 2
TP2002
+B
TP2003
REC SHIFTER
R2010
TP2004
TO CAPSTAN PHASE LOOP (IC2003 ⑮)
TP2001
+B
R2017
BUFF OSC
+B
R2022
CYLINDER FREE RUN
TP2005
C2003
22
21
20
19
18
17
15
13
SCHMDT
PG MM1
PG MM2
RS FF
REC SF MM3
TPZ
S/H
BUFF OSC
IC2001
SCHMDT
1/2
MM
TPZ
S/H
REC ON
AMP
DUTY MM
1/2
1
5
8
9
11
R2023, C2017 D2004, D2005
ERROR VOLTAG
FILTER
Q2011
CAP REV/ON


Q2010
FF, CAP, REV/ON
FF Ⓗ J
IC2007-18
IC2007-19
IC2007-21
10V/5msec. div.
P001
PG 1
+B
R2017
BUFF OSC
+B
R2022
CYLINDER FREE RUN
TP2005
P001
3 M3
4 M2
5 M1
13
BUFF OSC
MM
1/2
11
IC2002
22
20
21
19
18
13
FEED BACK
3 DEFFERENTIAL AMP
PRE AMP
DETECTOR
CYLINDER FG GENERATOR
OSCILLATOR
(VCC/2)
1
3
5
7
8
9
DDC
N
S
P001
12 OSC
10 P-COM
9 P1
8 P2
7 P3
6 M-COM
R2023, C2017
D2004, D2005
ERROR VOLTAGE FILTER
SPEED UP : Ⓛ
SPEED DOWN : Ⓗ
IC2001-11 REC 0.7Vp-p
IC2001-11 PLAY 1.2Vp-p
1V/10msec. div.
IC2002-3
IC2002-5
IC2002-7
1V/5msec. div.
Q2011
CAP REV/ON
CAP. REVERSE Ⓗ g
SIGNAL PATH: PHASE LOOP
SIGNAL PATH: SPEED LOOP

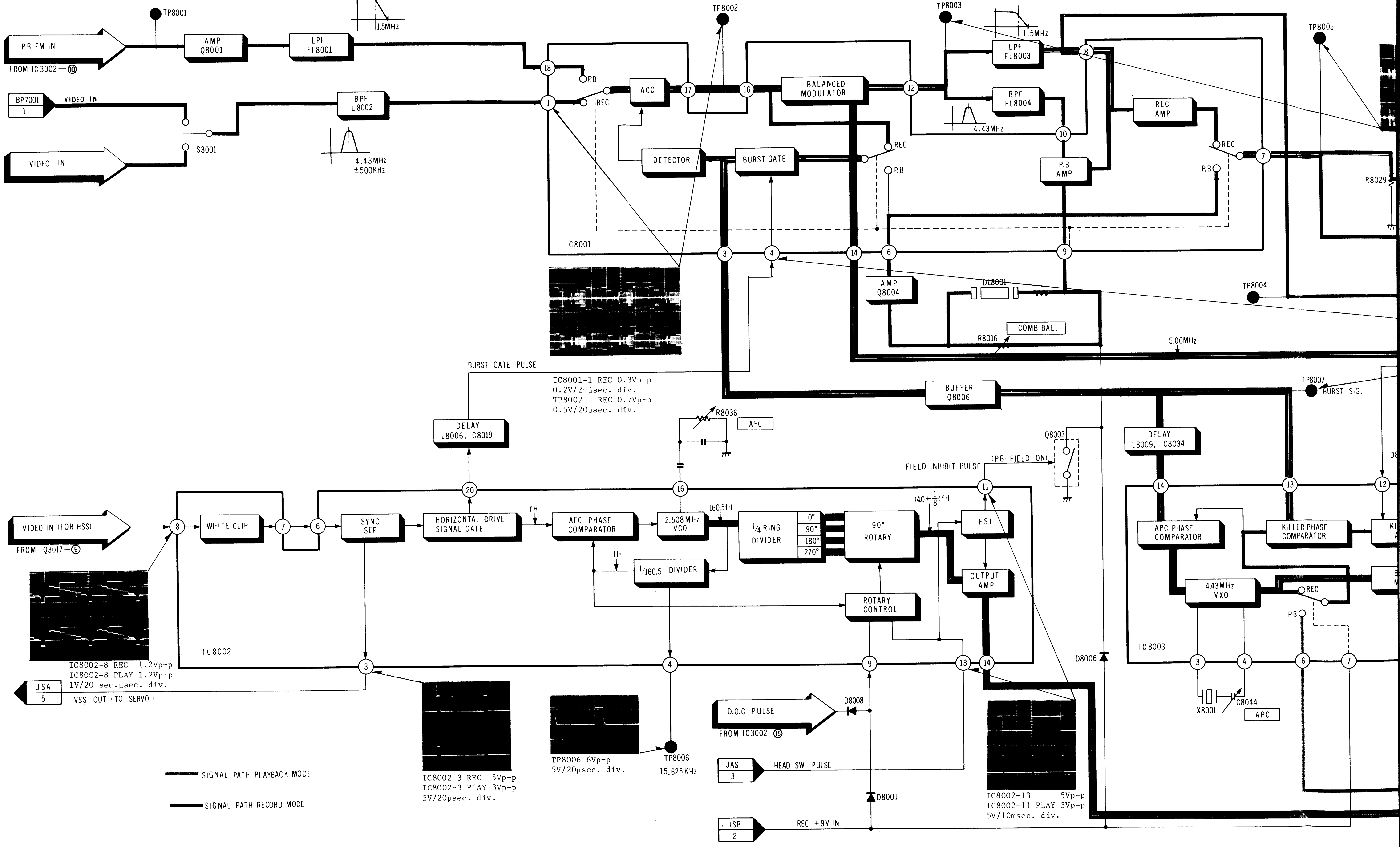
LUMINANCE PROCESS BLOCK DIAGRAM



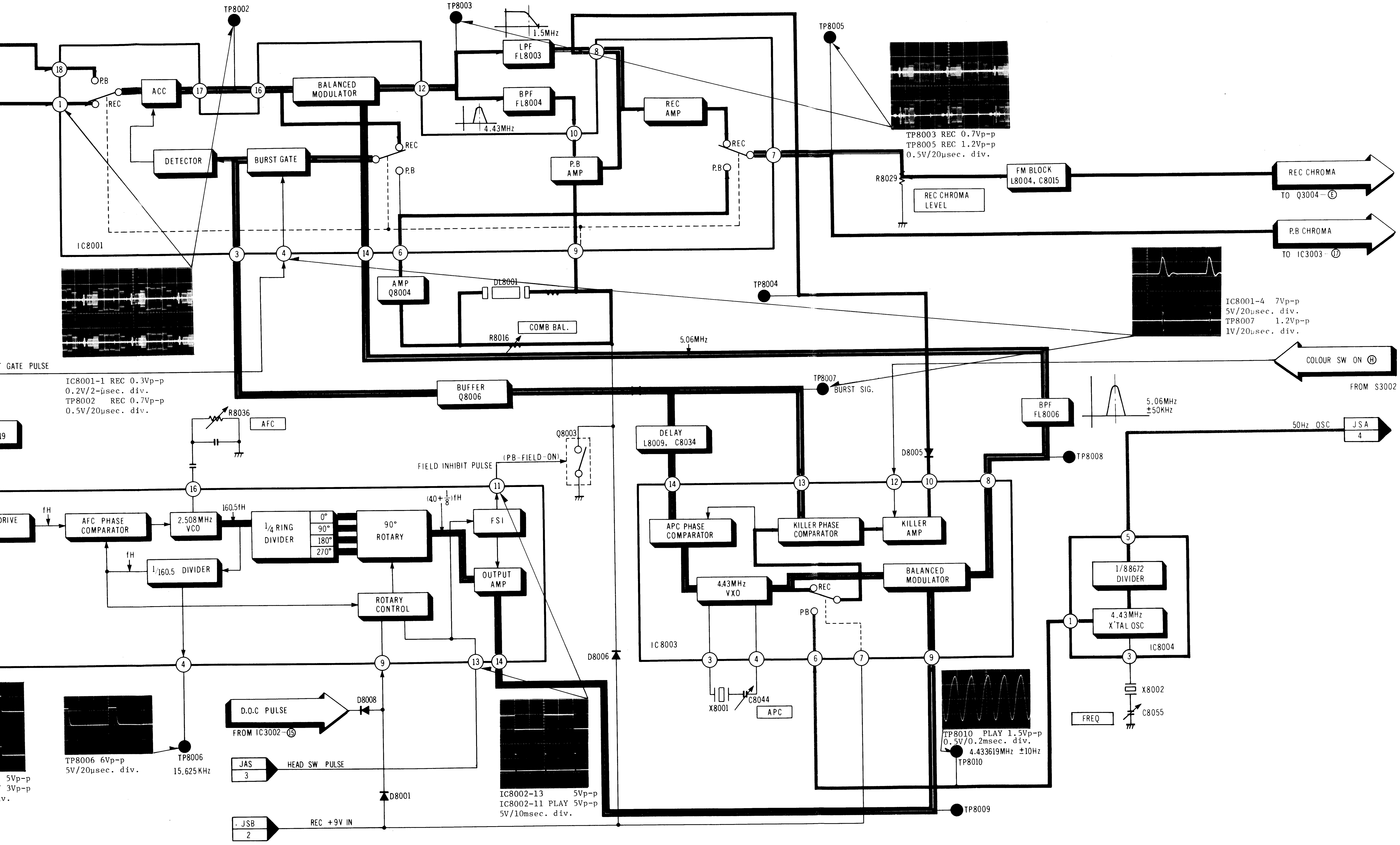
BP7001
1
VIDEO IN
(DEMOD)
S3001
TUNER-CAMERA
SELECT SW
TUNER
CAMERA
TP3001
CAMERA IN
AGC AMP
PB AMP
REC
PB
BUFFER AMP
IC3001
3
1
22
RESPONSE
4
FREQUENCY
(MHz)
FL3001
LPF
Q3001
BUFFER
20
CLAMP
VIDEO AMP
PB AMP
REC
PB
BUFFER
AMP
18
R3004 C3002 C3003
NON-LINEAR
EMPHASIS
Q3002
BUFFER
16
CLAMP
MAIN
EMPHASIS
5
RESPONSE
(dB)
0
0.01 0.05 0.1 0.5 1 2 3 4 5
FREQUENCY (Hz)
-20dB
-10dB
-0dB
+5V
TP3001 REC
IC3001-1 PLAY
LUMINANCE E·E MODE
IC3003-19 REC 2Vp-p
IC3003-19 PLAY 2Vp-p
1V/20μsec. div.
TP3014
(A)
R3077 R3078
C3061,C3062
HPF
(B)
16
(C)
LIMITER
14
(D)
15
(E)
NOISE
CANSELLER
MIX
20
AMP
REC
AMP
PB
19
18
17
IC3003
Q3017
BUFFER
FL3003
PHASE COMP
(FOR RF CONV.)
Q3018
BUFFER
VIDEO OUT
TP3013
VIDEO OUT
BP3001
5
FROM IC8001⑦
PB CHROMA
4.43MHz
R3086
C3068,C3069
DE-EMPHASIS
Q3015
VIDEO AMP
FL3002
LPF
12
FM DEMOD
LIMITER
MIX
DOUBLE
LIMITER
6
5
IC3003
JSC
3
PICTURE VR (+)
R2075
PICTURE
JSC
1
PICTURE VR (-)
C3047,R3062
LPF
C3051, R3064
HPF
Q3012
BUFFER
DL3001
1H
DELAY LINE
17
18
OUTPUT
AMP
DOC AMP
DOC DET.
DOC DET
13
15
IC3002
Q3011
BUFFER
(DOC)
Q3010
FM AMP
L3014, R304
627KH TR
IC3003-12 PLAY 1Vp-p
0.5V/5msec. div.
Noise Cancellation Proveses
(a)
(b)
(c)
(d)
(e)
IC3003-5 PLAY 100mVp-p
TP3012 PLAY 80mVp-p
50mV/5msec. div.


-20dB
-10dB
-0dB
1 2345
QUENCY (Hz)
WHITE CLIP
DARK CLIP
+5V
R30
R3011
+5V
+5V
R3013
FM FREQ
REC CURR
003
Q3002
BUFFER
16
CLAMP
MAIN EMPHASIS
WHITE/DARK CLIP
10
13
14
R3012
12
FM MODU
11
TP3002
DEVIATION
IC3001
TP3003
TP3004
R3020
R3022
Q3004
MIX
Q3005,Q3006
RECORDING AMP
TP3005
P002 2
VIDEO HEAD A
P002 5
VIDEO HEAD B
VIDEO HEAD (A)
VIDEO HEAD (B)
Q3003
R3031
(DELAYED REC-ON)
DELAYED REC 9V
JSB 3
Q3010
Q3007 (PB-ON)
JSB 4
EXCEPT REC Ⓛ
(PB-ON)
IC3003-19 REC 2Vp-p
IC3003-19 PLAY 2Vp-p
1V/20μsec. div.
TP3014
COMP
F CONV)
Q3018
BUFFER
VIDEO OUT (FOR RF CONV)
BP6018 3
VIDEO OUT
BP3001 5
TP3008
1ST. 2ND AMP
4
VIDEO HEAD A
P002 1
R3041
TP3009
C3032
PEAK B
Q3009 (REC-ON)
JSA 4
SW PULSE
2
PG AMP
TO Q8001(B)
RF FOR CHROMA
10
CHROMA AMP
HEAD SW
D3003
DELAYED REC 9V
JSB 3
AGC DET
C3031
PEAK A
Q3008 (REC-ON)
OUTPUT AMP
DOC DET
13
Q3010
FM AMP
C3038 L3009
PHASE COMPENSATOR
11
12
AGC AMP
1ST 2ND AMP
6
TP3007
R3037
VIDEO HEAD B
P002 6
DOC AMP
DOC DET
L3014, R3045
627KH TRAP
TP3012
IC3002
TP3006
15
IC3002
Q3011
BUFFER (DOC)
IC8002 ⑨
DOC PULSE
SIGNAL PATH RECORD MODE
SIGNAL PATH PLAYBACK MODE

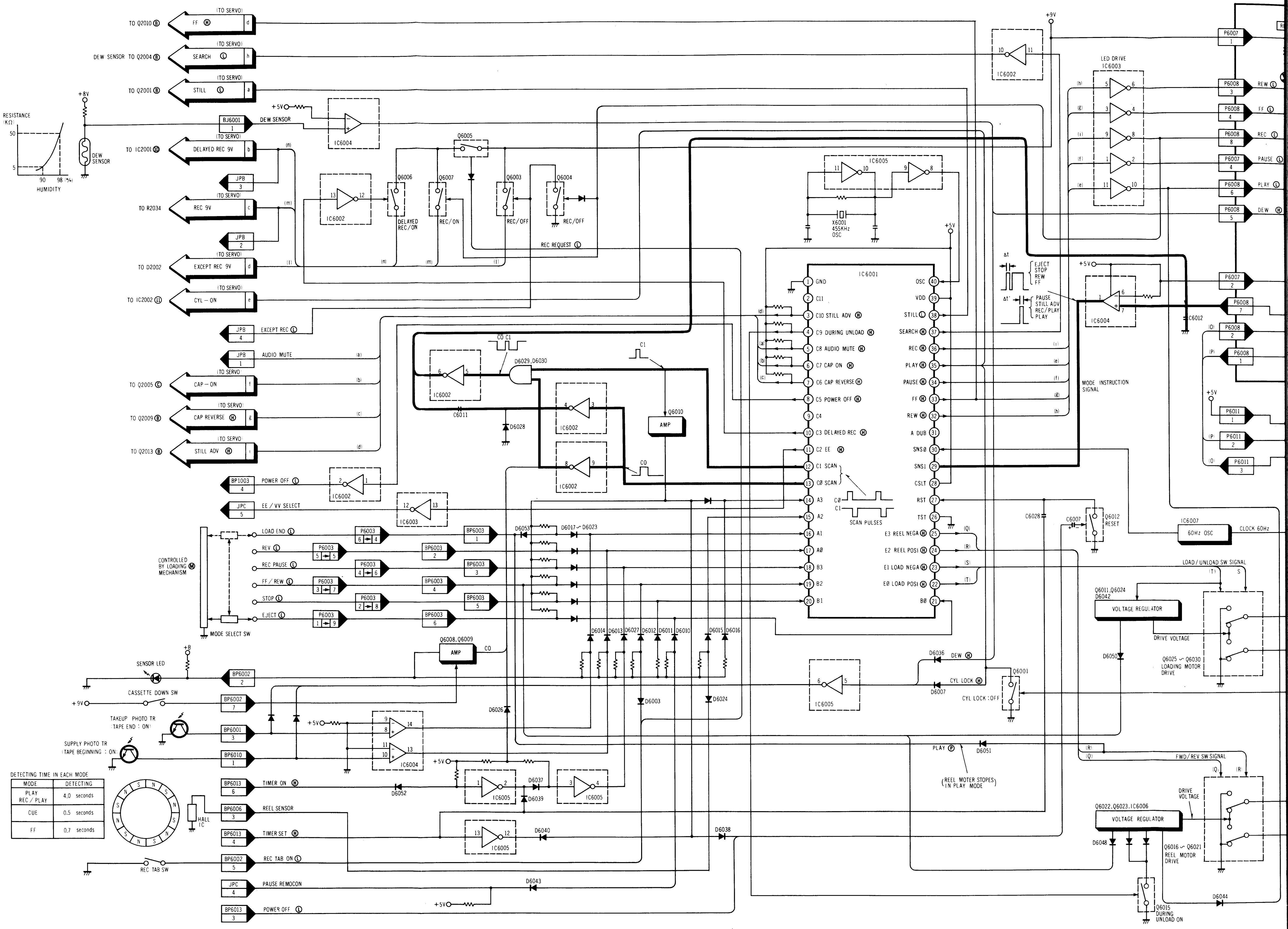
CHROMINANCE PROCESS BLOCK DIAGRAM


TP8001
P.B FM IN
FROM IC3002—⑩
AMP Q8001
LPF FL8001
1.5MHz
BP7001 1
VIDEO IN
S3001
VIDEO IN
BPF FL8002
4.43MHz ±500KHz
18
P.B
1
REC
ACC
DETECTOR
TP8002
17
16
BALANCED MODULATOR
BURST GATE
REC
P.B
12
TP8003
LPF FL8003
1.5MHz
BPF FL8004
4.43MHz
8
10
P.B AMP
REC AMP
REC
P.B
7
TP8005
R8029
IC8001
3
4
14
6
9
AMP Q8004
DL8001
COMB BAL.
R8016
TP8004
5.06MHz
BURST GATE PULSE
IC8001-1 REC 0.3Vp-p
0.2V/2-μsec. div.
TP8002 REC 0.7Vp-p
0.5V/20μsec. div.
DELAY L8006, C8019
R8036
AFC
BUFFER Q8006
TP8007
BURST SIG.
Q8003
FIELD INHIBIT PULSE
(PB-FIELD-ON)
DELAY L8009, C8034
20
16
fH
160.5fH
(40+1/8)fH
11
14
13
12
VIDEO IN (FOR HSS)
FROM Q3017—Ⓔ
8
WHITE CLIP
7
6
SYNC SEP
HORIZONTAL DRIVE SIGNAL GATE
AFC PHASE COMPARATOR
2.508MHz VCO
1/4 RING DIVIDER
0°
90°
180°
270°
90° ROTARY
FSI
OUTPUT AMP
APC PHASE COMPARATOR
KILLER PHASE COMPARATOR
fH
1/160.5 DIVIDER
ROTARY CONTROL
4.43MHz VXO
REC
PB
IC8002
IC8003
IC8002-8 REC 1.2Vp-p
IC8002-8 PLAY 1.2Vp-p
1V/20 sec.μsec. div.
JSA 5
VSS OUT (TO SERVO)
3
4
9
13
14
D8006
3
4
6
7
X8001
C8044
APC
D.O.C PULSE
FROM IC3002—⑮
D8008
TP8006 6Vp-p
5V/20μsec. div.
TP8006
15.625KHz
JAS 3
HEAD SW PULSE
D8001
JSB 2
REC +9V IN
IC8002-3 REC 5Vp-p
IC8002-3 PLAY 3Vp-p
5V/20μsec. div.
IC8002-13 5Vp-p
IC8002-11 PLAY 5Vp-p
5V/10msec. div.
SIGNAL PATH PLAYBACK MODE
SIGNAL PATH RECORD MODE

AM


TP8002
TP8003
1.5MHz
LPF
FL8003
BPF
FL8004
4.43MHz
TP8005
P.B
REC
ACC
BALANCED
MODULATOR
DETECTOR
BURST GATE
REC
AMP
P.B
AMP
IC8001
AMP
Q8004
DL8001
COMB BAL.
R8016
TP8003 REC 0.7Vp-p
TP8005 REC 1.2Vp-p
0.5V/20μsec. div.
R8029
REC CHROMA
LEVEL
FM BLOCK
L8004, C8015
REC CHROMA
TO Q3004-Ⓔ
P.B CHROMA
TO IC3003-⑰
TP8004
IC8001-4 7Vp-p
5V/20μsec. div.
TP8007 1.2Vp-p
1V/20μsec. div.
5.06MHz
COLOUR SW ON Ⓗ
FROM S3002
GATE PULSE
IC8001-1 REC 0.3Vp-p
0.2V/2-μsec. div.
TP8002 REC 0.7Vp-p
0.5V/20μsec. div.
BUFFER
Q8006
TP8007
BURST SIG.
BPF
FL8006
5.06MHz
±50KHz
TP8008
50Hz OSC
JSA
4
R8036
AFC
Q8003
FIELD INHIBIT PULSE
(PB-FIELD-ON)
DELAY
L8009, C8034
D8005
DRIVE
fH
AFC PHASE
COMPARATOR
2.508MHz
VCO
160.5fH
1/4 RING
DIVIDER
0°
90°
180°
270°
90°
ROTARY
(40+1/8)fH
FSI
OUTPUT
AMP
1/160.5 DIVIDER
fH
ROTARY
CONTROL
APC PHASE
COMPARATOR
KILLER PHASE
COMPARATOR
KILLER
AMP
4.43MHz
VXO
BALANCED
MODULATOR
REC
PB
IC8003
1/88672
DIVIDER
4.43MHz
X'TAL OSC
IC8004
D8006
X8001
C8044
APC
X8002
C8055
FREQ
D.O.C PULSE
FROM IC3002-⑮
D8008
JAS
3
HEAD SW PULSE
D8001
JSB
2
REC +9V IN
TP8006 6Vp-p
5V/20μsec. div.
TP8006
15.625KHz
5Vp-p
3Vp-p
v.
IC8002-13 5Vp-p
IC8002-11 PLAY 5Vp-p
5V/10msec. div.
TP8010 PLAY 1.5Vp-p
0.5V/0.2msec. div.
4.433619MHz ±10Hz
TP8010
TP8009
9
16
4
9
13
14
11

SYSTEM CONTROL BLOCK DIAGRAM

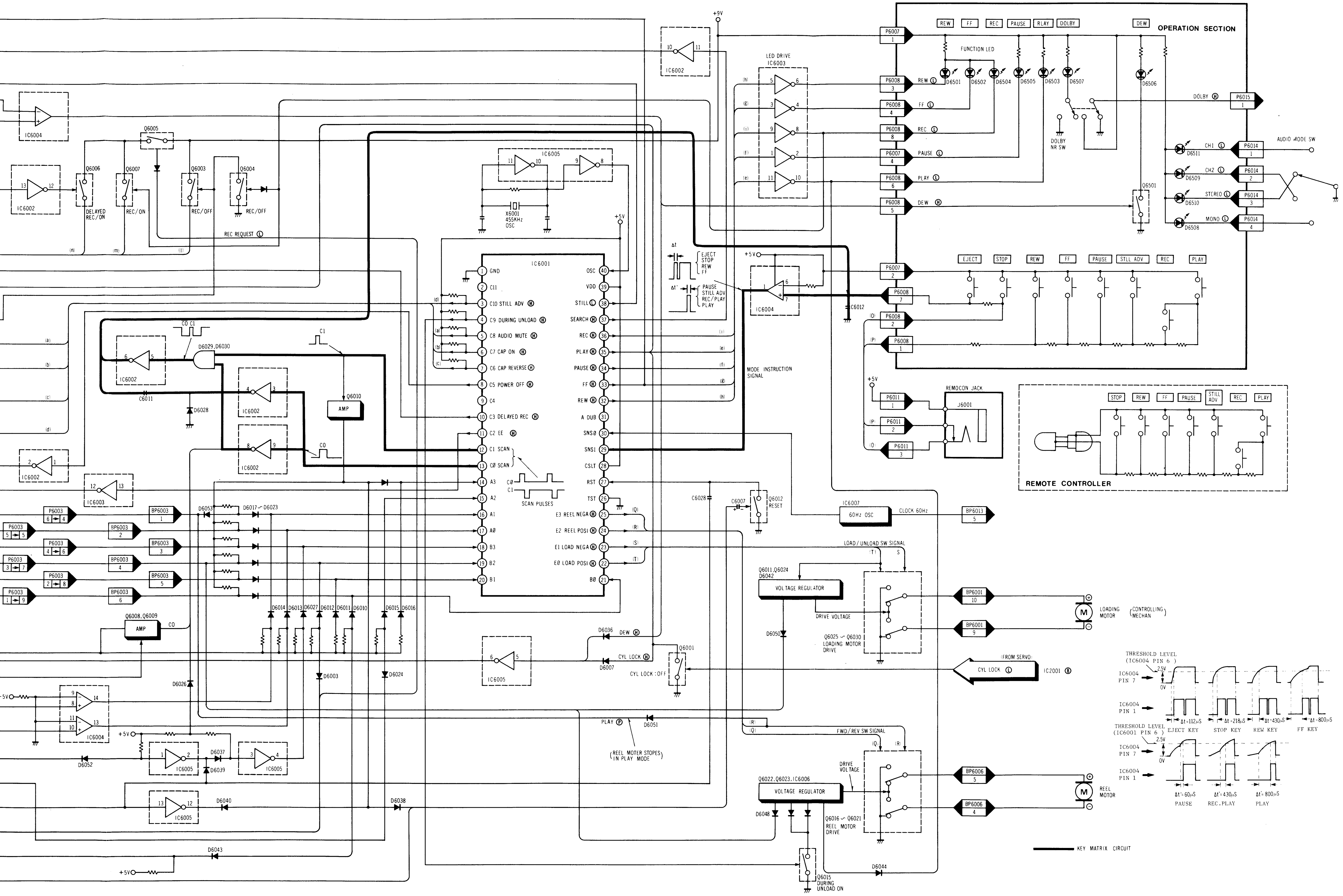


TO Q2010 ⒷFF Ⓗ (TO SERVO) d
DEW SENSOR TO Q2004 Ⓑ SEARCH Ⓛ (TO SERVO) h
TO Q2001 Ⓑ STILL Ⓛ (TO SERVO) a
RESISTANCE (KΩ)
50
5
90
98 (%)
HUMIDITY
+8V
DEW SENSOR
BJ6001 1
DEW SENSOR
+5V
IC6004
TO IC2001 ⑩ DELAYED REC 9V (TO SERVO) b
JPB 3
TO R2034 REC 9V (TO SERVO) c
JPB 2
TO D2002 EXCEPT REC 9V (TO SERVO) d
TO IC2002 ⑪ CYL – ON (TO SERVO) e
JPB 4 EXCEPT REC Ⓛ
JPB 1 AUDIO MUTE
TO Q2005 Ⓒ CAP – ON (TO SERVO) f
TO Q2009 Ⓑ CAP REVERSE Ⓗ (TO SERVO) g
TO Q2013 Ⓑ STILL ADV Ⓗ (TO SERVO) i
BP1003 4 POWER OFF Ⓛ
JPC 5 EE / VV SELECT
Q6005
Q6006 DELAYED REC/ON
Q6007 REC/ON
Q6003 REC/OFF
Q6004 REC/OFF
REC REQUEST Ⓛ
IC6002
IC6003
IC6005
X6001 455KHz OSC
+9V
LED DRIVE IC6003
P6007 1
P6008 3 REW Ⓛ
P6008 4 FF Ⓛ
P6008 8 REC Ⓛ
P6007 4 PAUSE Ⓛ
P6008 6 PLAY Ⓛ
P6008 5 DEW Ⓗ
P6007 2
P6008 7
P6008 2
P6008 1
P6011 1
P6011 2
P6011 3
+5V
EJECT STOP REW FF
PAUSE STILL ADV REC/PLAY PLAY
Δt
Δt'
C6012
MODE INSTRUCTION SIGNAL
CO C1
D6029, D6030
C6011
D6028
Q6010 AMP
C1
C0
IC6001
1 GND
2 C11
3 C10 STILL ADV Ⓗ
4 C9 DURING UNLOAD Ⓗ
5 C8 AUDIO MUTE Ⓗ
6 C7 CAP ON Ⓗ
7 C6 CAP REVERSE Ⓗ
8 C5 POWER OFF Ⓗ
9 C4
10 C3 DELAYED REC Ⓗ
11 C2 EE Ⓗ
12 C1 SCAN
13 C0 SCAN
14 A3
15 A2
16 A1
17 A0
18 B3
19 B2
20 B1
40 OSC
39 VDD
38 STILL Ⓛ
37 SEARCH Ⓗ
36 REC Ⓗ
35 PLAY Ⓗ
34 PAUSE Ⓗ
33 FF Ⓗ
32 REW Ⓗ
31 A DUB
30 SNS0
29 SNS1
28 CSLT
27 RST
26 TST
25 E3 REEL NEGA Ⓗ
24 E2 REEL POSI Ⓗ
23 E1 LOAD NEGA Ⓗ
22 E0 LOAD POSI Ⓗ
21 B0
SCAN PULSES
C6028
C6007
Q6012 RESET
IC6007 60Hz OSC CLOCK 60Hz
LOAD / UNLOAD SW SIGNAL
Q6011, Q6024 D6042 VOLTAGE REGULATOR
DRIVE VOLTAGE
D6050
Q6025 ~ Q6030 LOADING MOTOR DRIVE
CONTROLLED BY LOADING Ⓜ MECHANISM
LOAD END Ⓛ P6003 6 4 BP6003 1
REV Ⓛ P6003 5 5 BP6003 2
REC PAUSE Ⓛ P6003 4 6 BP6003 3
FF / REW Ⓛ P6003 3 7 BP6003 4
STOP Ⓛ P6003 2 8 BP6003 5
EJECT Ⓛ P6003 1 9 BP6003 6
MODE SELECT SW
D6053 D6017 ~ D6023
D6014 D6013 D6027 D6012 D6011 D6010 D6015 D6016
D6003 D6024 D6026
Q6008, Q6009 AMP CO
+8
SENSOR LED BP6002 2
CASSETTE DOWN SW +9V BP6002 7
TAKEUP PHOTO TR (TAPE END : ON) BP6001 3
SUPPLY PHOTO TR (TAPE BEGINNING : ON) BP6010 1
+5V IC6004
D6036 DEW Ⓗ
CYL LOCK Ⓗ D6007
Q6001 CYL LOCK : OFF
PLAY Ⓟ D6051
(REEL MOTER STOPES IN PLAY MODE)
FWD/REV SW SIGNAL
DRIVE VOLTAGE
Q6022, Q6023, IC6006 VOLTAGE REGULATOR
D6048
Q6016 ~ Q6021 REEL MOTOR DRIVE
D6044
Q6015 DURING UNLOAD ON
BP6013 6 TIMER ON Ⓗ D6052
D6037 D6039
HALL IC
BP6006 3 REEL SENSOR
BP6013 4 TIMER SET Ⓗ D6040 D6038
BP6002 5 REC TAB ON Ⓛ REC TAB SW
JPC 4 PAUSE REMOCON D6043
BP6013 3 POWER OFF Ⓛ
N S

DETECTING TIME IN EACH MODE

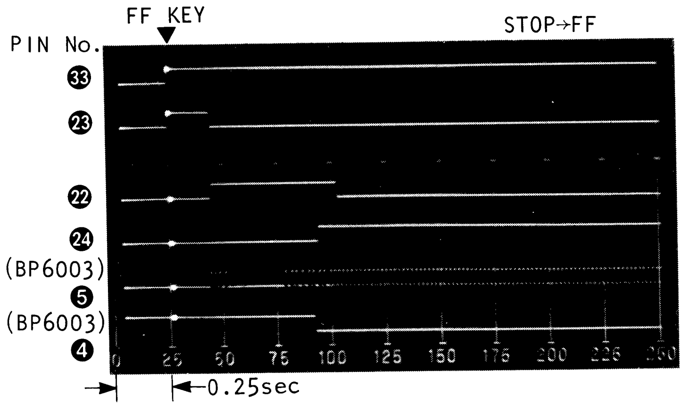
MODE	DETECTING
PLAY REC / PLAY	4.0 seconds
CUE	0.5 seconds
FF	0.7 seconds

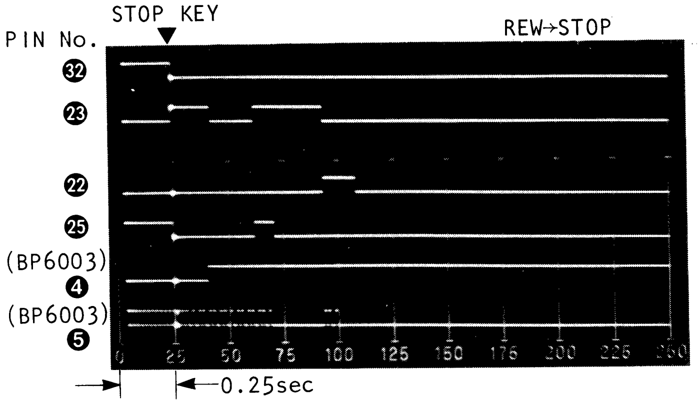
CK DIAGRAM

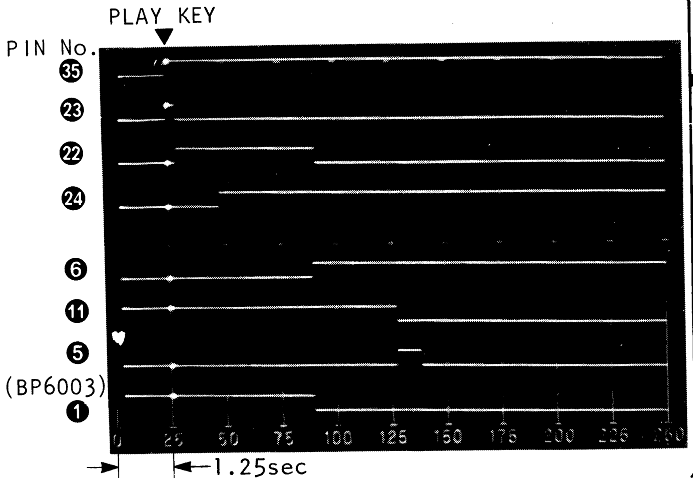


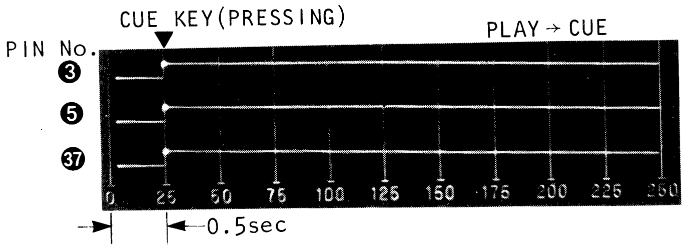
+9V
IC6002
LED DRIVE
IC6003
OPERATION SECTION
REW
FF
REC
PAUSE
PLAY
DOLBY
DEW
FUNCTION LED
P6007
P6008
P6015
P6014
D6501
D6502
D6504
D6505
D6503
D6507
D6506
DOLBY NR SW
DOLBY Ⓗ
REW Ⓛ
FF Ⓛ
REC Ⓛ
PAUSE Ⓛ
PLAY Ⓛ
DEW Ⓗ
AUDIO MODE SW
CH1 Ⓛ
CH2 Ⓛ
STEREO Ⓛ
MONO Ⓛ
D6511
D6509
D6510
D6508
Q6501
EJECT
STOP
PAUSE
STILL ADV
IC6004
Q6005
Q6006
Q6007
Q6003
Q6004
DELAYED REC/ON
REC/ON
REC/OFF
REC REQUEST Ⓛ
IC6005
X6001 455KHz OSC
+5V
IC6001
GND
C11
C10 STILL ADV Ⓗ
C9 DURING UNLOAD Ⓗ
C8 AUDIO MUTE Ⓗ
C7 CAP ON Ⓗ
C6 CAP REVERSE Ⓗ
C5 POWER OFF Ⓗ
C4
C3 DELAYED REC Ⓗ
C2 EE Ⓗ
C1 SCAN
C0 SCAN
A3
A2
A1
A0
B3
B2
B1
OSC
VDD
STILL Ⓛ
SEARCH Ⓗ
REC Ⓗ
PLAY Ⓗ
PAUSE Ⓗ
FF Ⓗ
REW Ⓗ
A DUB
SNS0
SNS1
CSLT
RST
TST
E3 REEL NEGA Ⓗ
E2 REEL POSI Ⓗ
E1 LOAD NEGA Ⓗ
E0 LOAD POSI Ⓗ
B0
SCAN PULSES
Δt
EJECT STOP REW FF
Δt'
PAUSE STILL ADV REC/PLAY PLAY
C6012
MODE INSTRUCTION SIGNAL
C0 C1
D6029, D6030
C6011
D6028
Q6010
AMP
C1
C0
P6003
BP6003
D6053
D6017 ∼ D6023
D6014
D6013
D6027
D6012
D6011
D6010
D6015
D6016
D6003
D6024
Q6008, Q6009
AMP
D6026
D6052
D6037
D6039
D6040
D6038
D6043
REMOCON JACK
J6001
P6011
REMOTE CONTROLLER
STILL ADV
C6028
C6007
Q6012 RESET
IC6007
60Hz OSC
CLOCK 60Hz
BP6013
LOAD/UNLOAD SW SIGNAL
Q6011, Q6024 Q6042
VOLTAGE REGULATOR
DRIVE VOLTAGE
D6050
Q6025 ∼ Q6030 LOADING MOTOR DRIVE
BP6001
LOADING MOTOR
(CONTROLLING MECHAN)
D6036
DEW Ⓗ
CYL LOCK Ⓗ
D6007
CYL LOCK : OFF
Q6001
(FROM SERVO)
CYL LOCK Ⓛ
IC2001 ⑧
PLAY Ⓟ
D6051
(REEL MOTER STOPES IN PLAY MODE)
FWD/REV SW SIGNAL
Q6022, Q6023, IC6006
D6048
Q6016 ∼ Q6021 REEL MOTOR DRIVE
BP6006
REEL MOTOR
D6044
Q6015 DURING UNLOAD ON
THRESHOLD LEVEL (IC6004 PIN 6)
IC6004 PIN 7
IC6004 PIN 1
2.5V
0V
Δt≒112μS EJECT KEY
Δt≒218μS STOP KEY
Δt≒430μS REW KEY
Δt≒800μS FF KEY
THRESHOLD LEVEL (IC6001 PIN 6)
Δt'≒60μS PAUSE
Δt'≒430μS REC.PLAY
Δt'≒800μS PLAY
KEY MATRIX CIRCUIT

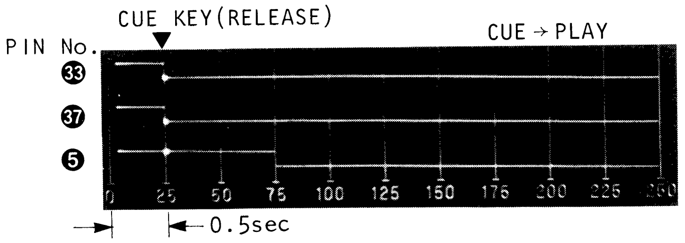
MICROPROCESSOR (IC6001: MN1405VKK) MODE BY MODE TIMING CHART

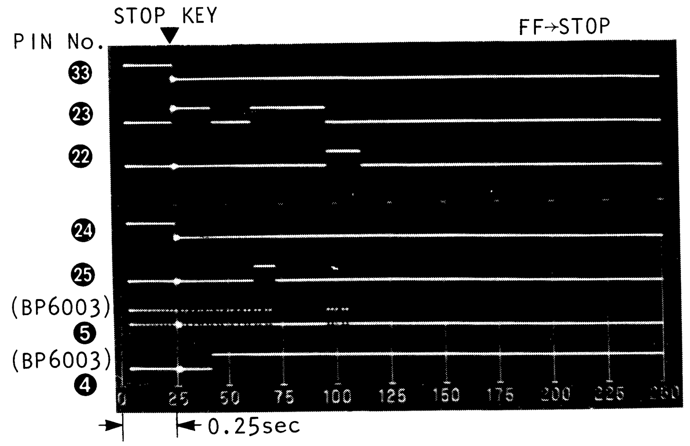


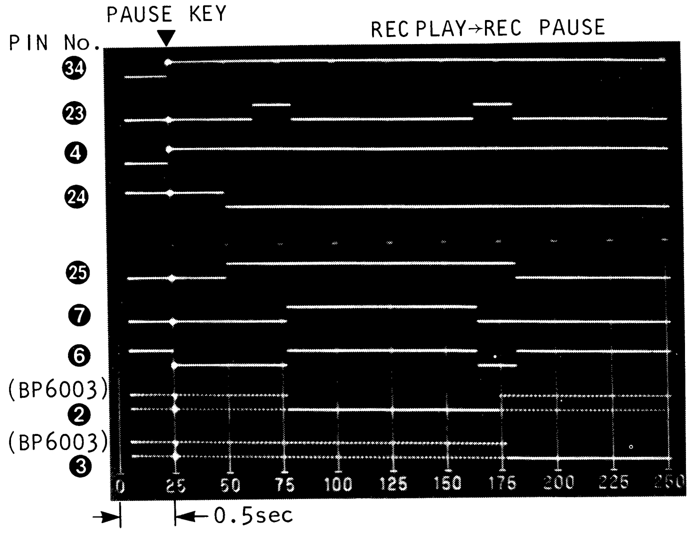


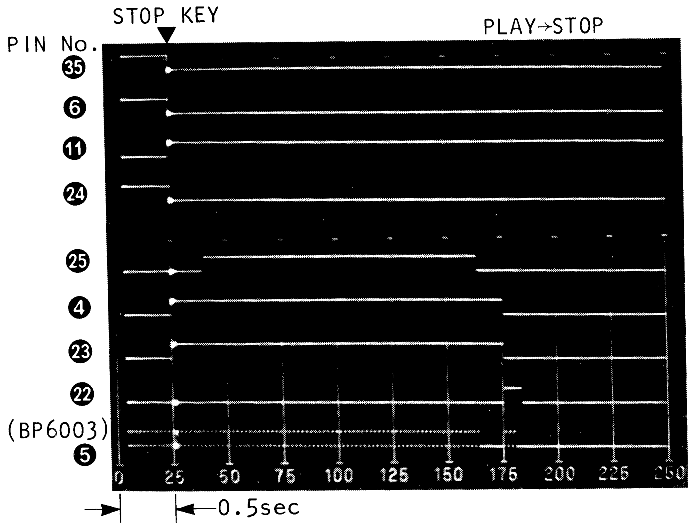


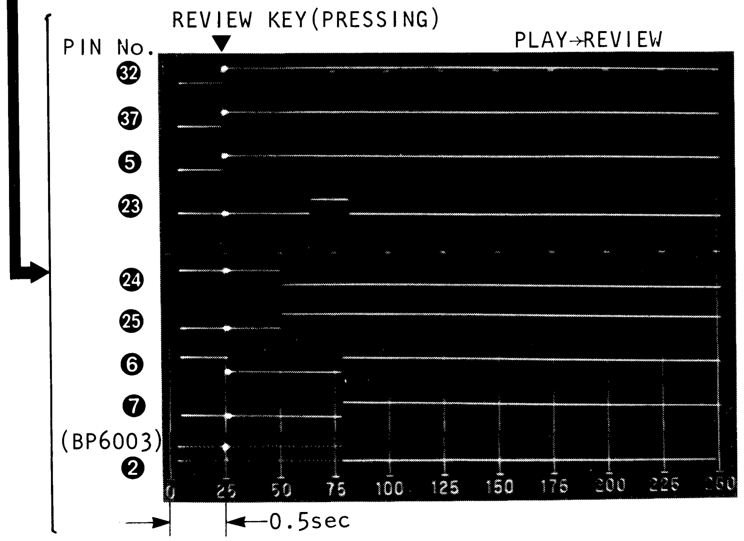


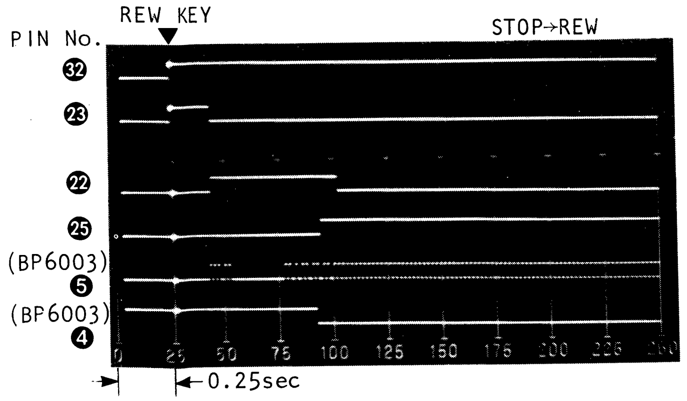


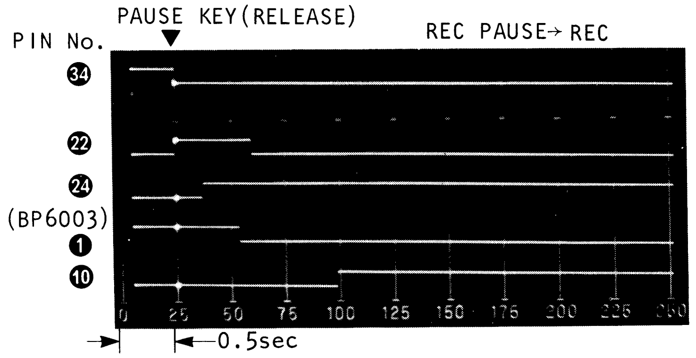


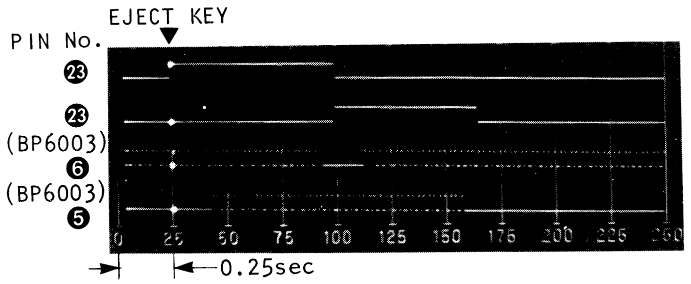


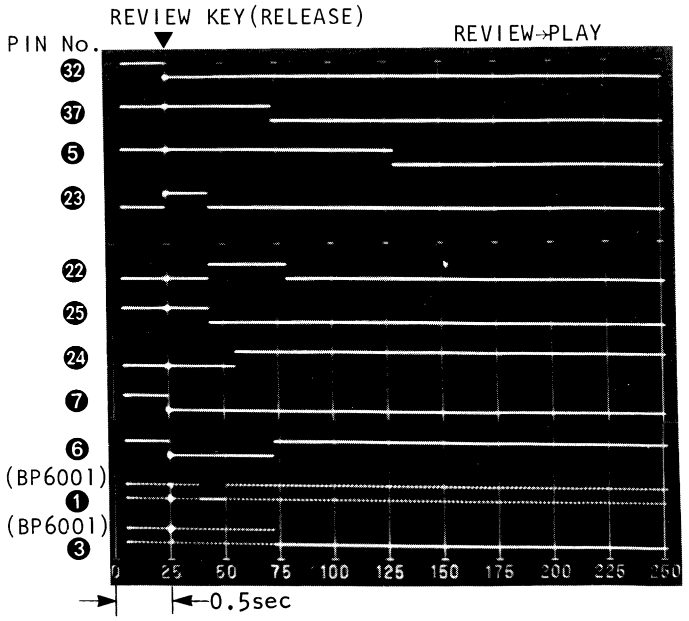




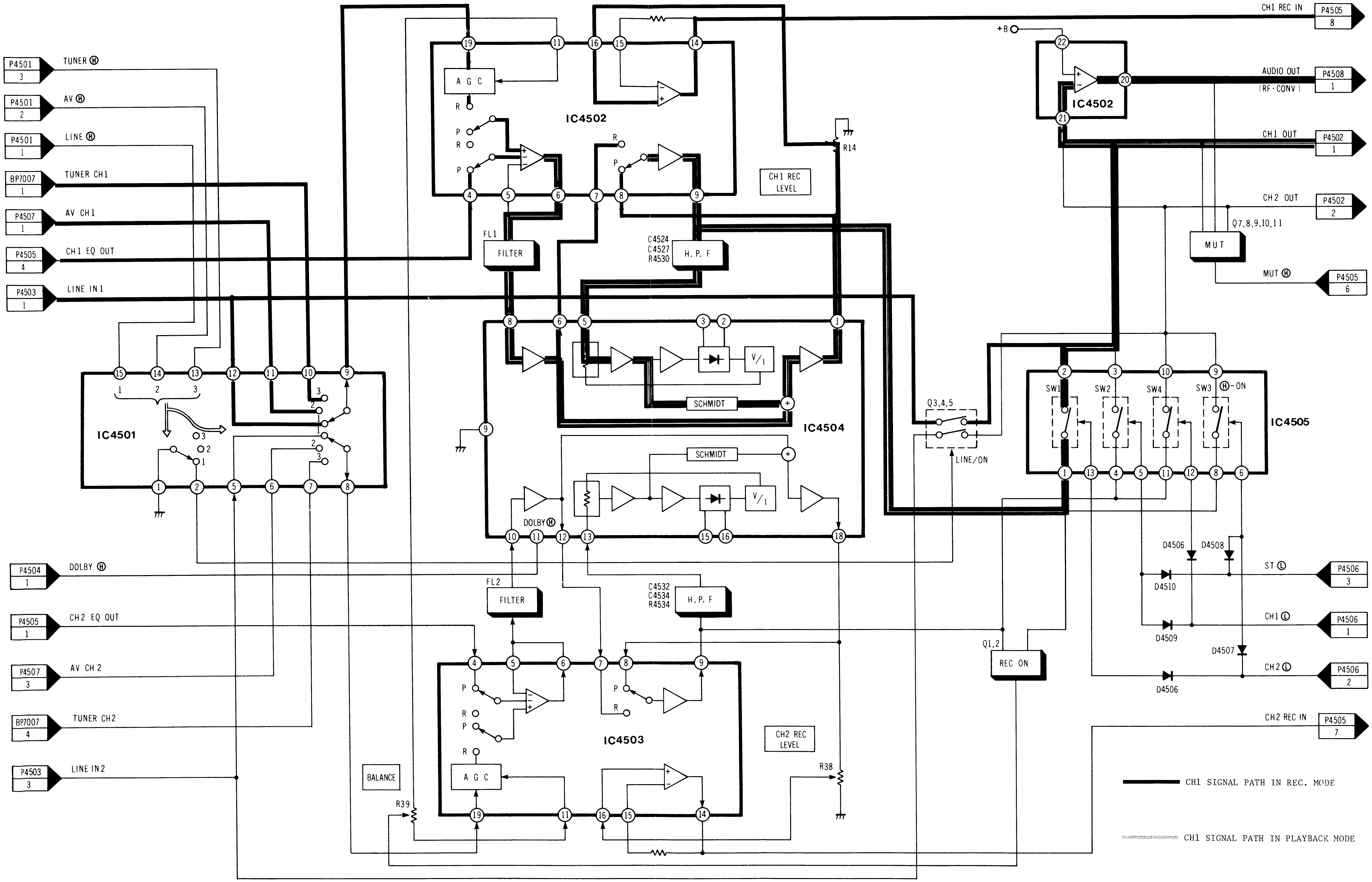




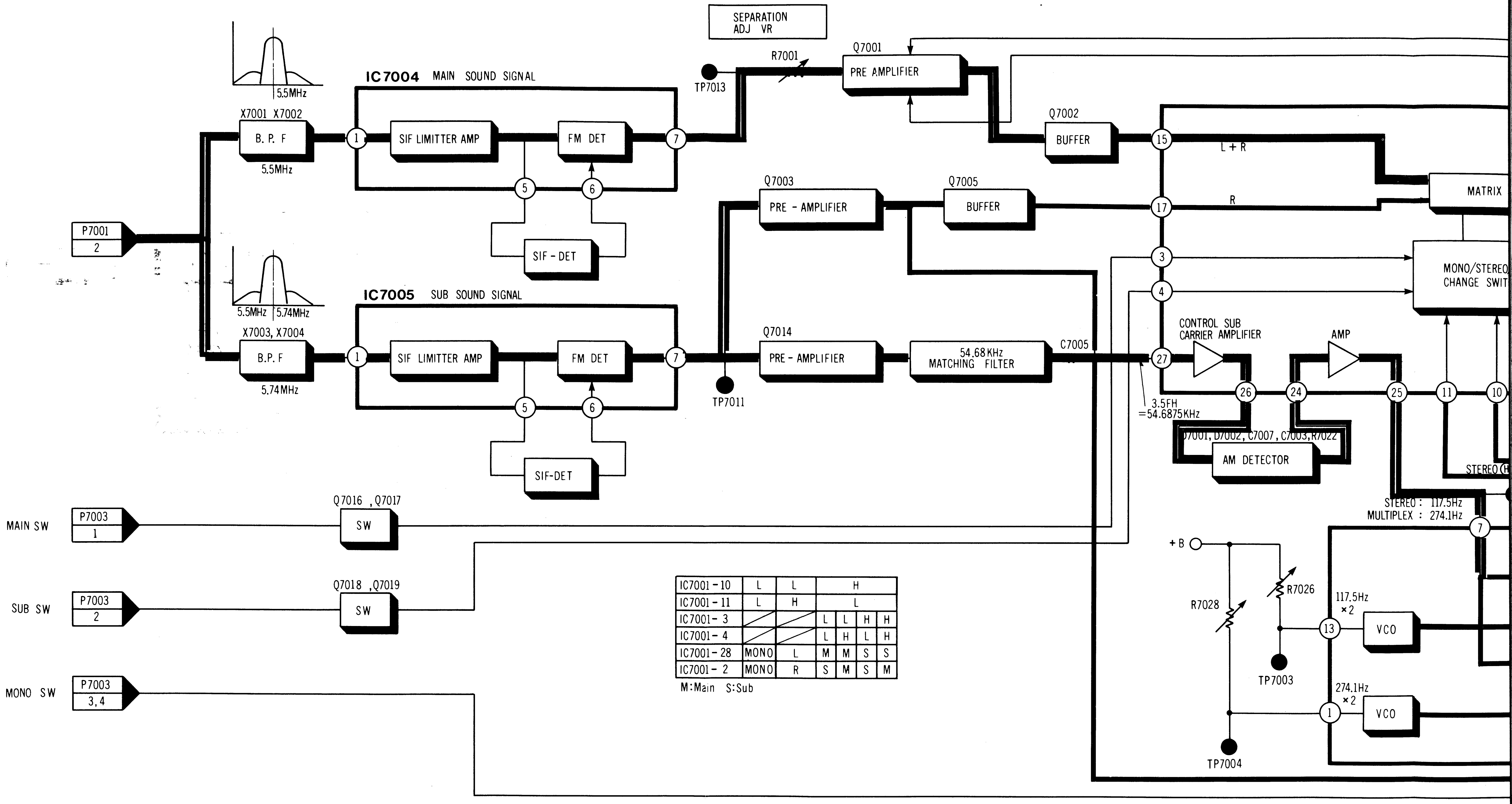




SUB AUDIO BLOCK DIAGRAM

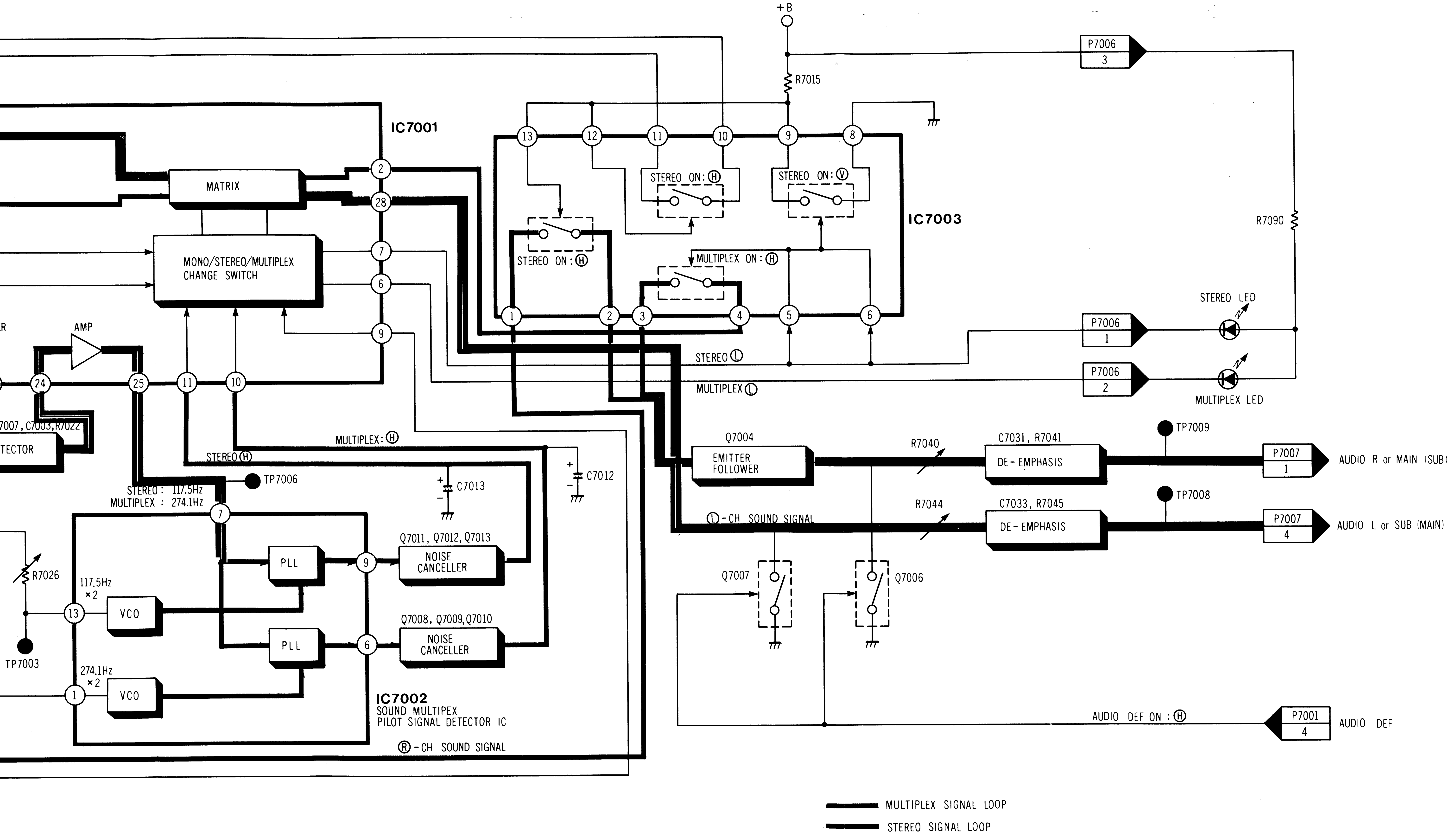

P4501 3
TUNER Ⓗ
P4501 2
AV Ⓗ
P4501 1
LINE Ⓗ
BP7007 1
TUNER CH1
P4507 1
AV CH1
P4505 4
CH1 EQ OUT
P4503 1
LINE IN1
IC4501
IC4502
A G C
R
P
FL1
FILTER
C4524
C4527
R4530
H. P. F
CH1 REC LEVEL
R14
IC4504
SCHMIDT
V/I
DOLBY Ⓗ
FL2
C4532
C4534
R4534
IC4503
CH2 REC LEVEL
R38
R39
BALANCE
P4504 1
DOLBY Ⓗ
P4505 1
CH2 EQ OUT
P4507 3
AV CH 2
BP7007 4
TUNER CH2
P4503 3
LINE IN2
CH1 REC IN
P4505 8
+B
AUDIO OUT
(RF·CONV)
P4508 1
CH1 OUT
P4502 1
CH2 OUT
P4502 2
Q7,8,9,10,11
MUT
MUT Ⓗ
P4505 6
Q3,4,5
LINE/ON
IC4505
SW1
SW2
SW4
SW3 Ⓗ-ON
D4506
D4508
D4510
D4509
D4507
D4506
ST Ⓛ
P4506 3
CH1 Ⓛ
P4506 1
CH2 Ⓛ
P4506 2
Q1,2
REC ON
CH2 REC IN
P4505 7
CH1 SIGNAL PATH IN REC. MODE
CH1 SIGNAL PATH IN PLAYBACK MODE

DECODER BLOCK DIAGRAM

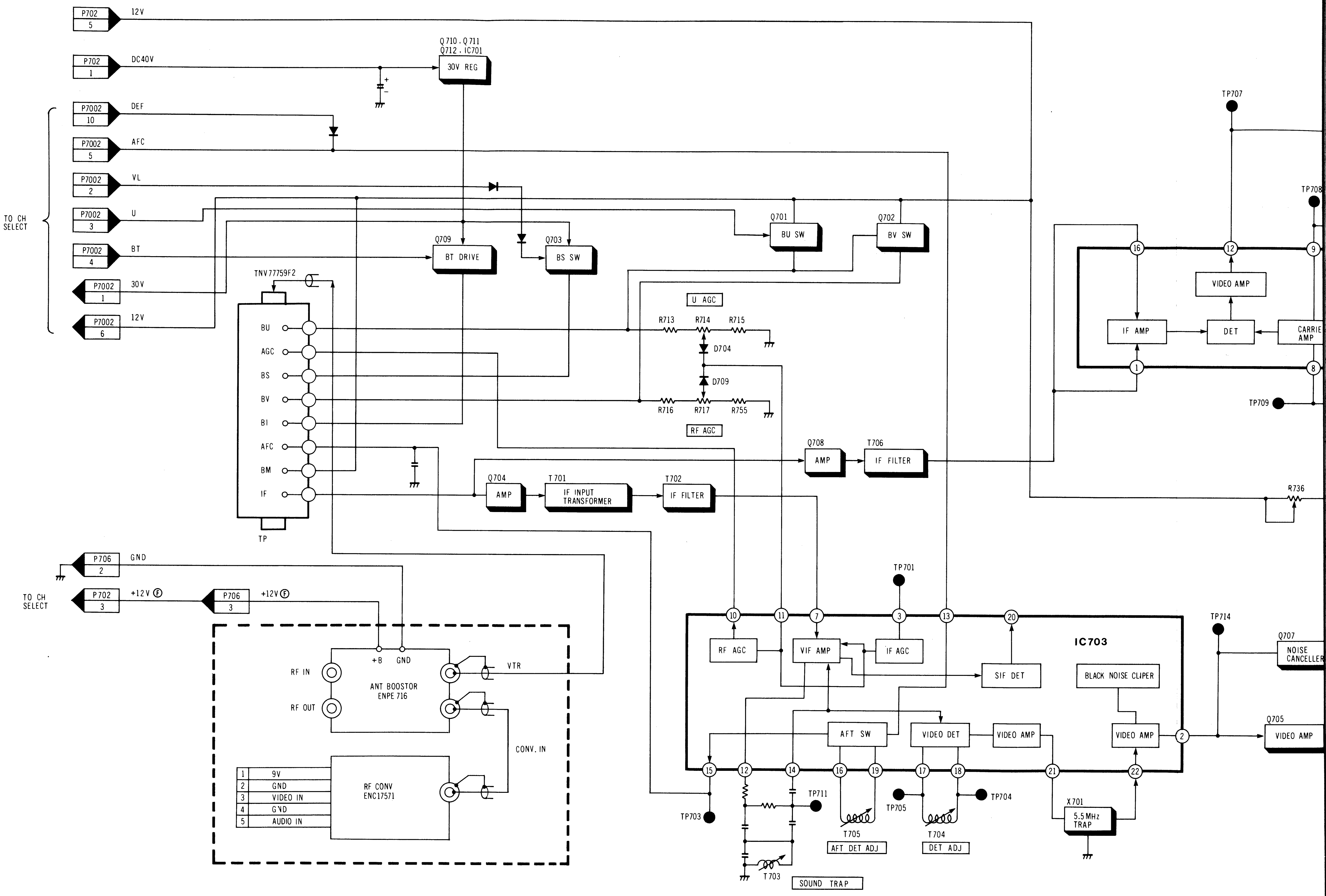

SEPARATION ADJ VR
5.5MHz
IC7004 MAIN SOUND SIGNAL
X7001 X7002
B. P. F
5.5MHz
SIF LIMITTER AMP
FM DET
SIF-DET
TP7013
R7001
Q7001
PRE AMPLIFIER
Q7002
BUFFER
L + R
R
MATRIX
Q7003
PRE - AMPLIFIER
Q7005
BUFFER
MONO/STEREO CHANGE SWIT
P7001
2
5.5MHz
5.74MHz
IC7005 SUB SOUND SIGNAL
X7003, X7004
B.P. F
5.74MHz
SIF LIMITTER AMP
FM DET
SIF-DET
TP7011
Q7014
PRE - AMPLIFIER
54.68KHz MATCHING FILTER
C7005
CONTROL SUB CARRIER AMPLIFIER
AMP
3.5FH =54.6875KHz
D7001, D7002, C7007, C7003, R7022
AM DETECTOR
STEREO
STEREO : 117.5Hz
MULTIPLEX : 274.1Hz
MAIN SW
P7003
1
Q7016 ,Q7017
SW
SUB SW
P7003
2
Q7018 ,Q7019
SW
MONO SW
P7003
3, 4
+B
R7026
R7028
TP7003
117.5Hz ×2
VCO
274.1Hz ×2
VCO
TP7004
1
5
6
7
15
17
3
4
27
26
24
25
11
10
13

IC7001 - 10	L	L	H			
IC7001 - 11	L	H	L			
IC7001 - 3			L	L	H	H
IC7001 - 4			L	H	L	H
IC7001 - 28	MONO	L	M	M	S	S
IC7001 - 2	MONO	R	S	M	S	M

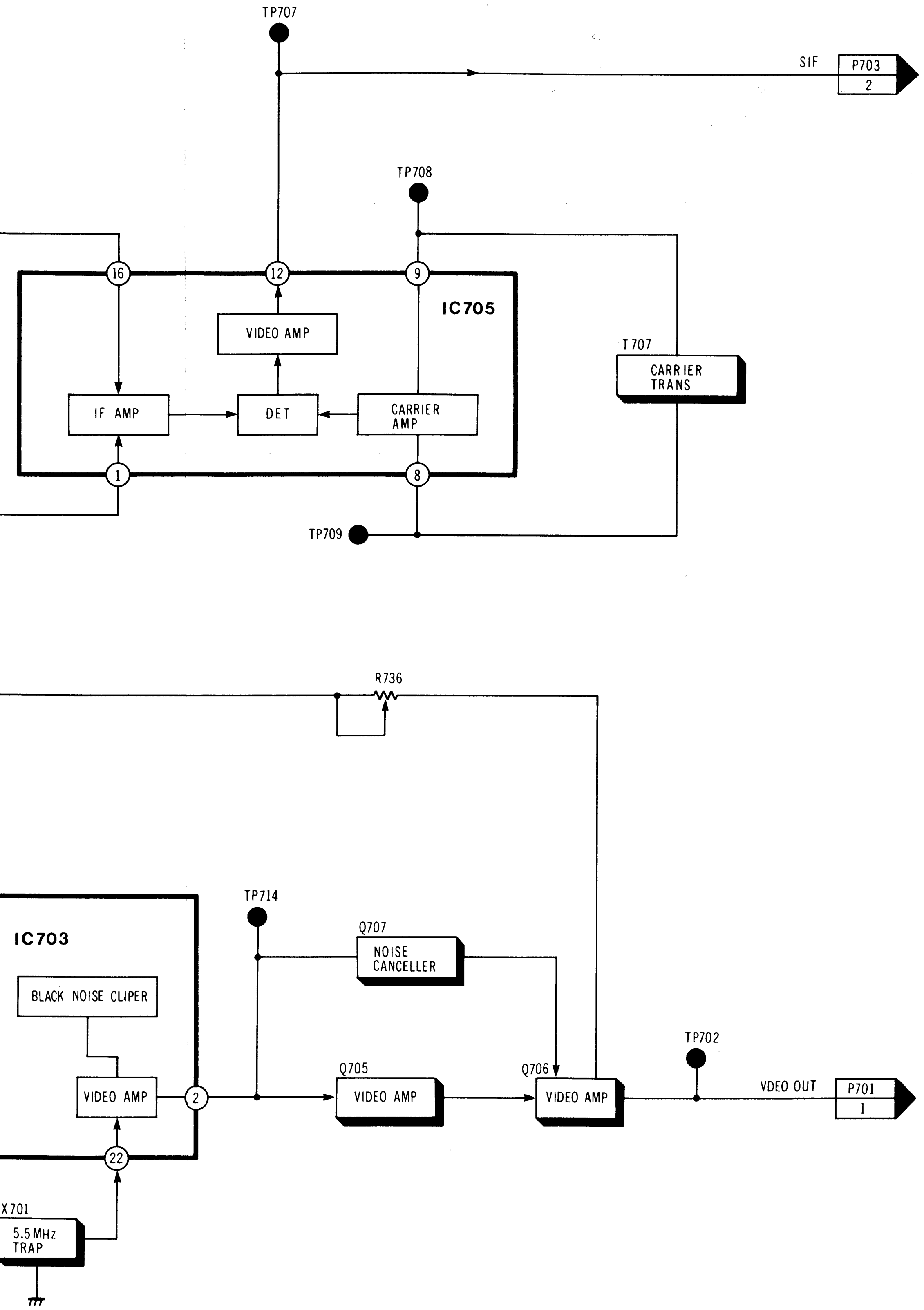
M:Main S:Sub

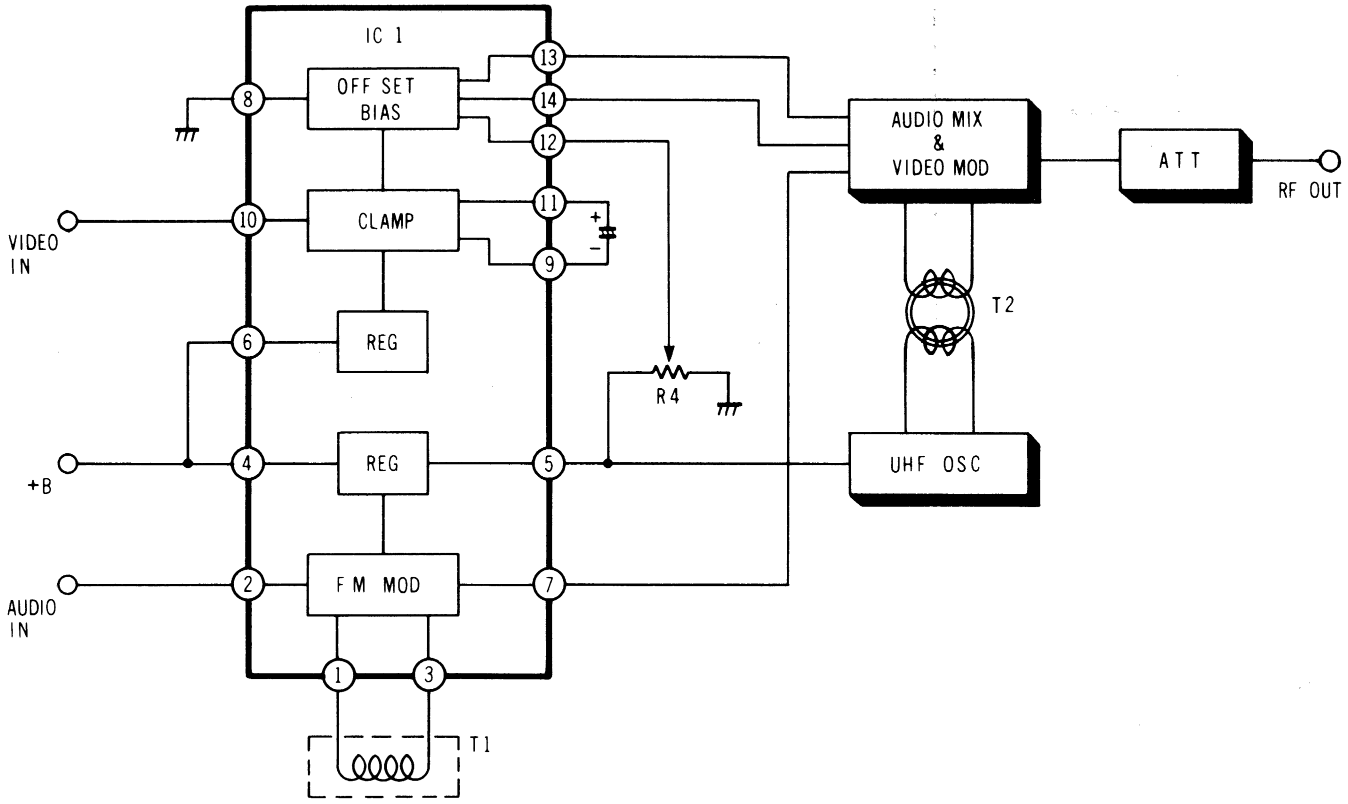

+B
R7015
P7006
3
IC7001
MATRIX
MONO/STEREO/MULTIPLEX CHANGE SWITCH
AMP
ER
7007, C7003, R7022
TECTOR
13
12
11
10
9
8
2
28
7
6
9
24
25
11
10
STEREO ON: Ⓗ
STEREO ON: Ⓥ
STEREO ON: Ⓗ
MULTIPLEX ON: Ⓗ
IC7003
1
2
3
4
5
6
R7090
STEREO LED
P7006
1
P7006
2
MULTIPLEX LED
STEREO Ⓛ
MULTIPLEX Ⓛ
MULTIPLEX: Ⓗ
STEREO Ⓗ
TP7006
STEREO: 117.5Hz
MULTIPLEX: 274.1Hz
7
C7013
C7012
Q7011, Q7012, Q7013
NOISE CANCELLER
PLL
9
R7026
117.5Hz ×2
13
VCO
PLL
6
Q7008, Q7009, Q7010
NOISE CANCELLER
TP7003
274.1Hz ×2
1
VCO
IC7002
SOUND MULTIPEX PILOT SIGNAL DETECTOR IC
Ⓡ-CH SOUND SIGNAL
Q7004
EMITTER FOLLOWER
R7040
C7031, R7041
DE-EMPHASIS
TP7009
P7007
1
AUDIO R or MAIN (SUB)
Ⓛ-CH SOUND SIGNAL
R7044
C7033, R7045
DE-EMPHASIS
TP7008
P7007
4
AUDIO L or SUB (MAIN)
Q7007
Q7006
AUDIO DEF ON: Ⓗ
P7001
4
AUDIO DEF
MULTIPLEX SIGNAL LOOP
STEREO SIGNAL LOOP

TV DEMODULATOR BLOCK DIAGRAM

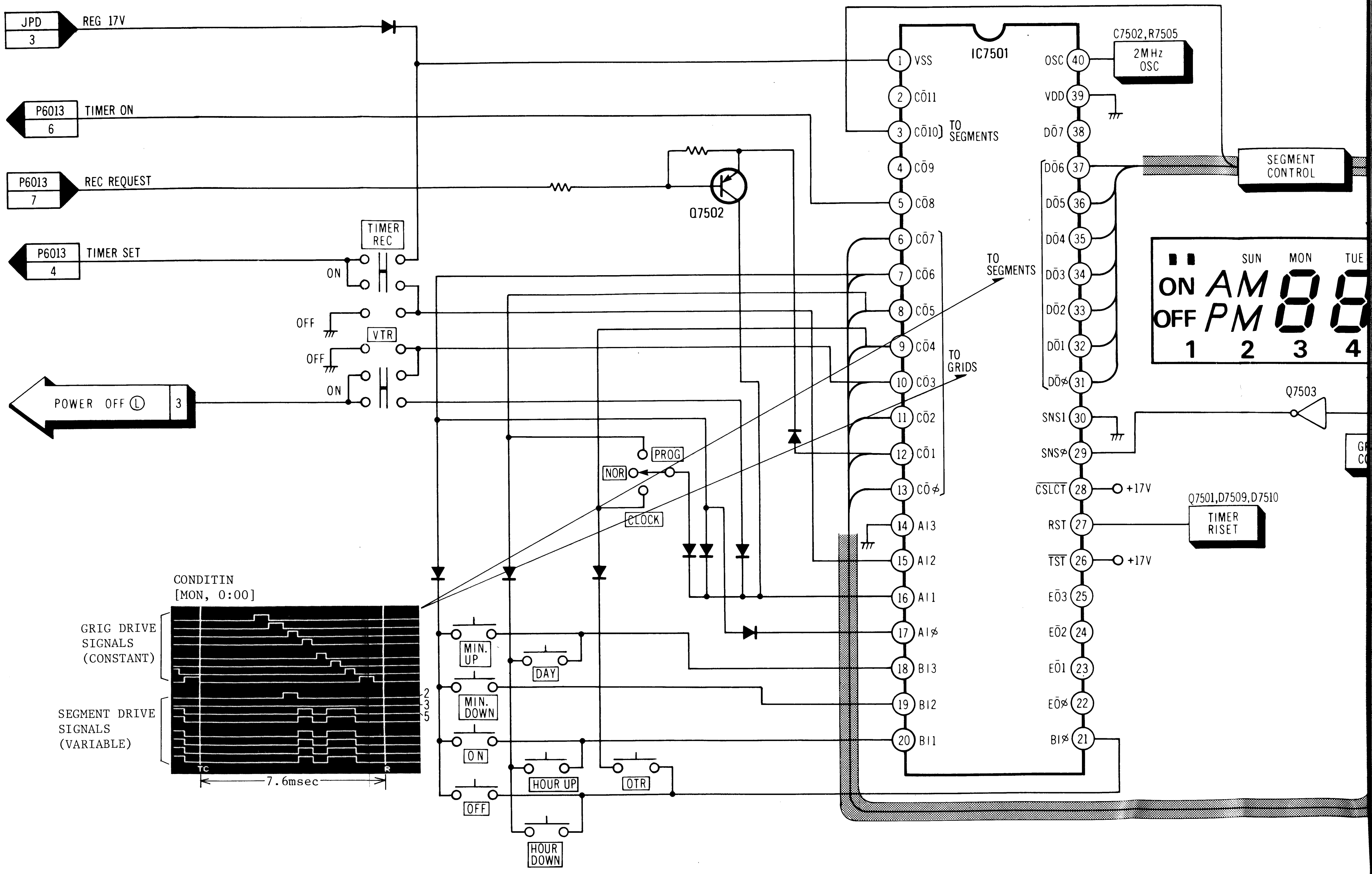

P702 5
12V
P702 1
DC40V
Q710, Q711
Q712, IC701
30V REG
P7002 10
DEF
P7002 5
AFC
P7002 2
VL
P7002 3
U
P7002 4
BT
P7002 1
30V
P7002 6
12V
TO CH SELECT
Q709
BT DRIVE
Q703
BS SW
Q701
BU SW
Q702
BV SW
TNV77759F2
BU
AGC
BS
BV
BI
AFC
BM
IF
TP
U AGC
R713
R714
R715
D704
D709
R716
R717
R755
RF AGC
Q708
AMP
T706
IF FILTER
Q704
AMP
T701
IF INPUT TRANSFORMER
T702
IF FILTER
P706 2
GND
TO CH SELECT
P702 3
+12V Ⓕ
P706 3
+12V Ⓕ
+B
GND
RF IN
RF OUT
ANT BOOSTOR
ENPE 716
VTR
CONV. IN
RF CONV
ENC17571
1 9V
2 GND
3 VIDEO IN
4 GND
5 AUDIO IN
TP701
IC703
10
11
7
3
13
20
RF AGC
VIF AMP
IF AGC
SIF DET
BLACK NOISE CLIPER
AFT SW
VIDEO DET
VIDEO AMP
VIDEO AMP
2
15
12
14
16
19
17
18
21
22
TP703
TP711
TP705
TP704
T705
AFT DET ADJ
T704
DET ADJ
T703
SOUND TRAP
X701
5.5MHz TRAP
TP714
Q707
NOISE CANCELLER
Q705
VIDEO AMP
TP707
TP708
16
12
9
VIDEO AMP
IF AMP
DET
CARRIE AMP
1
8
TP709
R736

RF CONVERTER BLOCK DIAGRAM

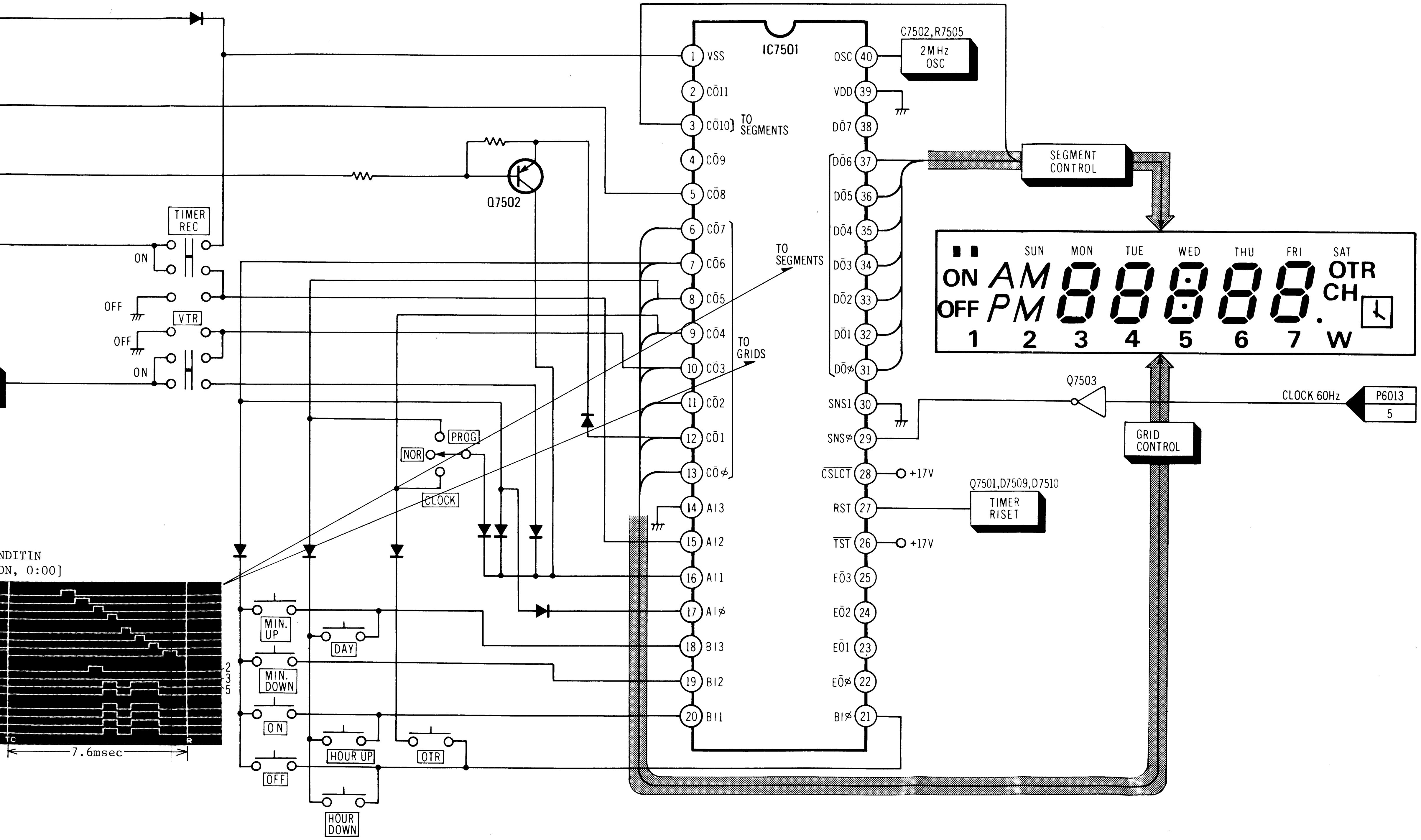

TP707
SIF
P703
2
TP708
16
12
9
IC705
VIDEO AMP
T707
CARRIER TRANS
IF AMP
DET
CARRIER AMP
1
8
TP709
R736
TP714
Q707
NOISE CANCELLER
IC703
BLACK NOISE CLIPER
VIDEO AMP
2
Q705
VIDEO AMP
Q706
VIDEO AMP
TP702
VDEO OUT
P701
1
22
X701
5.5MHz TRAP


IC 1
OFF SET BIAS
CLAMP
REG
REG
F M MOD
8
10
6
4
2
13
14
12
11
9
5
7
1
3
VIDEO IN
+B
AUDIO IN
R4
T1
AUDIO MIX & VIDEO MOD
T2
UHF OSC
ATT
RF OUT

PROGRAMMABLE TIMER BLOCK DIAGRAM

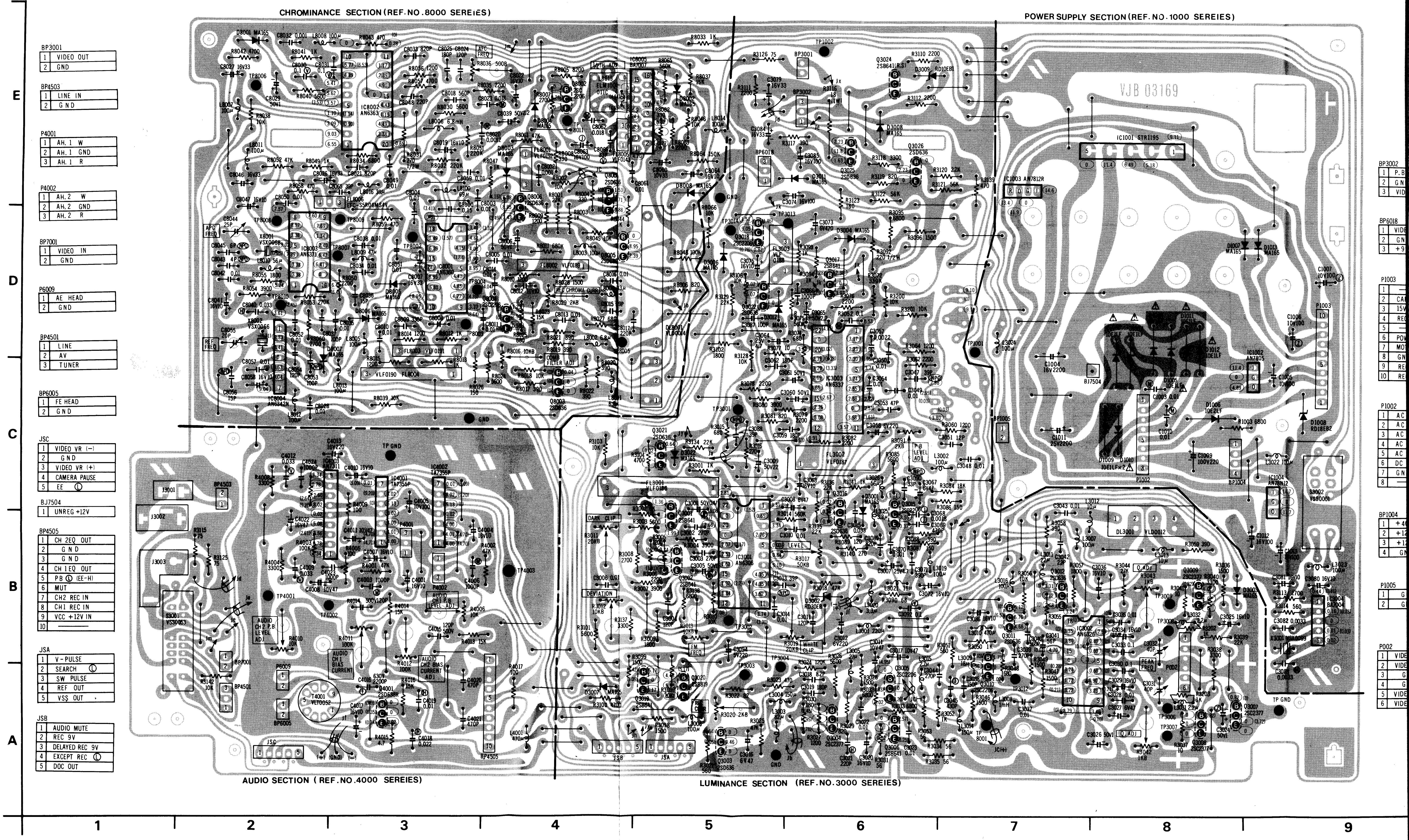

JPD 3
REG 17V
P6013 6
TIMER ON
P6013 7
REC REQUEST
P6013 4
TIMER SET
TIMER REC
ON
OFF
VTR
OFF
ON
POWER OFF Ⓛ 3
Q7502
PROG
NOR
CLOCK
CONDITIN
[MON, 0:00]
GRIG DRIVE SIGNALS (CONSTANT)
SEGMENT DRIVE SIGNALS (VARIABLE)
TC
R
2
3
5
7.6msec
MIN. UP
DAY
MIN. DOWN
ON
HOUR UP
OTR
OFF
HOUR DOWN
IC7501
1 VSS
2 CŌ11
3 CŌ10
TO SEGMENTS
4 CŌ9
5 CŌ8
6 CŌ7
7 CŌ6
8 CŌ5
9 CŌ4
10 CŌ3
11 CŌ2
12 CŌ1
13 CŌϕ
TO SEGMENTS
TO GRIDS
14 AI3
15 AI2
16 AI1
17 AIϕ
18 BI3
19 BI2
20 BI1
OSC 40
VDD 39
DŌ7 38
DŌ6 37
DŌ5 36
DŌ4 35
DŌ3 34
DŌ2 33
DŌ1 32
DŌϕ 31
SNS1 30
SNSϕ 29
CSLCT 28
RST 27
TST 26
EŌ3 25
EŌ2 24
EŌ1 23
EŌϕ 22
BIϕ 21
C7502,R7505
2MHz OSC
SEGMENT CONTROL
+17V
Q7501,D7509,D7510
TIMER RISET
+17V
Q7503
SUN
MON
TUE
ON
OFF
AM
PM
1
2
3
4

ABLE TIMER BLOCK DIAGRAM



IC7501
VSS
CŌ11
CŌ10
TO SEGMENTS
CŌ9
CŌ8
CŌ7
CŌ6
CŌ5
CŌ4
CŌ3
CŌ2
CŌ1
CŌ∅
TO GRIDS
A13
A12
A11
A1∅
B13
B12
B11
OSC
VDD
DŌ7
DŌ6
DŌ5
DŌ4
DŌ3
DŌ2
DŌ1
DŌ∅
SNS1
SNS∅
CSLCT
RST
TST
EŌ3
EŌ2
EŌ1
EŌ∅
BI∅
+17V
+17V
C7502,R7505
2MHz OSC
Q7501,D7509,D7510
TIMER RISET
SEGMENT CONTROL
GRID CONTROL
Q7502
Q7503
CLOCK 60Hz
P6013
5
TIMER REC
ON
OFF
VTR
OFF
ON
PROG
NOR
CLOCK
MIN. UP
DAY
MIN. DOWN
ON
HOUR UP
OTR
OFF
HOUR DOWN
NDITIN
ON, 0:00]
2
3
5
TC
R
7.6msec
SUN
MON
TUE
WED
THU
FRI
SAT
ON
OFF
AM
PM
OTR
CH
1
2
3
4
5
6
7
W

LUMINANCE, CHROMINANCE, AUDIO & POWER SUPPLY BOARD (VEP03169B)


CHROMINANCE SECTION (REF. NO. 8000 SEREIES)
POWER SUPPLY SECTION (REF. NO. 1000 SEREIES)
AUDIO SECTION (REF. NO. 4000 SEREIES)
LUMINANCE SECTION (REF. NO. 3000 SEREIES)
VJB 03169
E
D
C
B
A
1
2
3
4
5
6
7
8
9
BP3002
BP6018
P1003
P1002
BP1004
P1005

BP3001

1	VIDEO OUT
2	GND

BP4503

1	LINE IN
2	GND

P4001

1	AH. 1 W
2	AH. 1 GND
3	AH. 1 R

P4002

1	AH. 2 W
2	AH. 2 GND
3	AH. 2 R

BP7001

1	VIDEO IN
2	GND

P6009

1	AE HEAD
2	GND

BP4501

1	LINE
2	AV
3	TUNER

BP6005

1	FE HEAD
2	GND

JSC

1	VIDEO VR (−)
2	GND
3	VIDEO VR (+)
4	CAMERA PAUSE
5	EE Ⓛ

BJ7504

1	UNREG +12V

BP4505

1	CH 2EQ OUT
2	GND
3	GND
4	CH 1EQ OUT
5	PB Ⓛ (EE-H)
6	MUT
7	CH2 REC IN
8	CH1 REC IN
9	VCC +12V IN
10	———

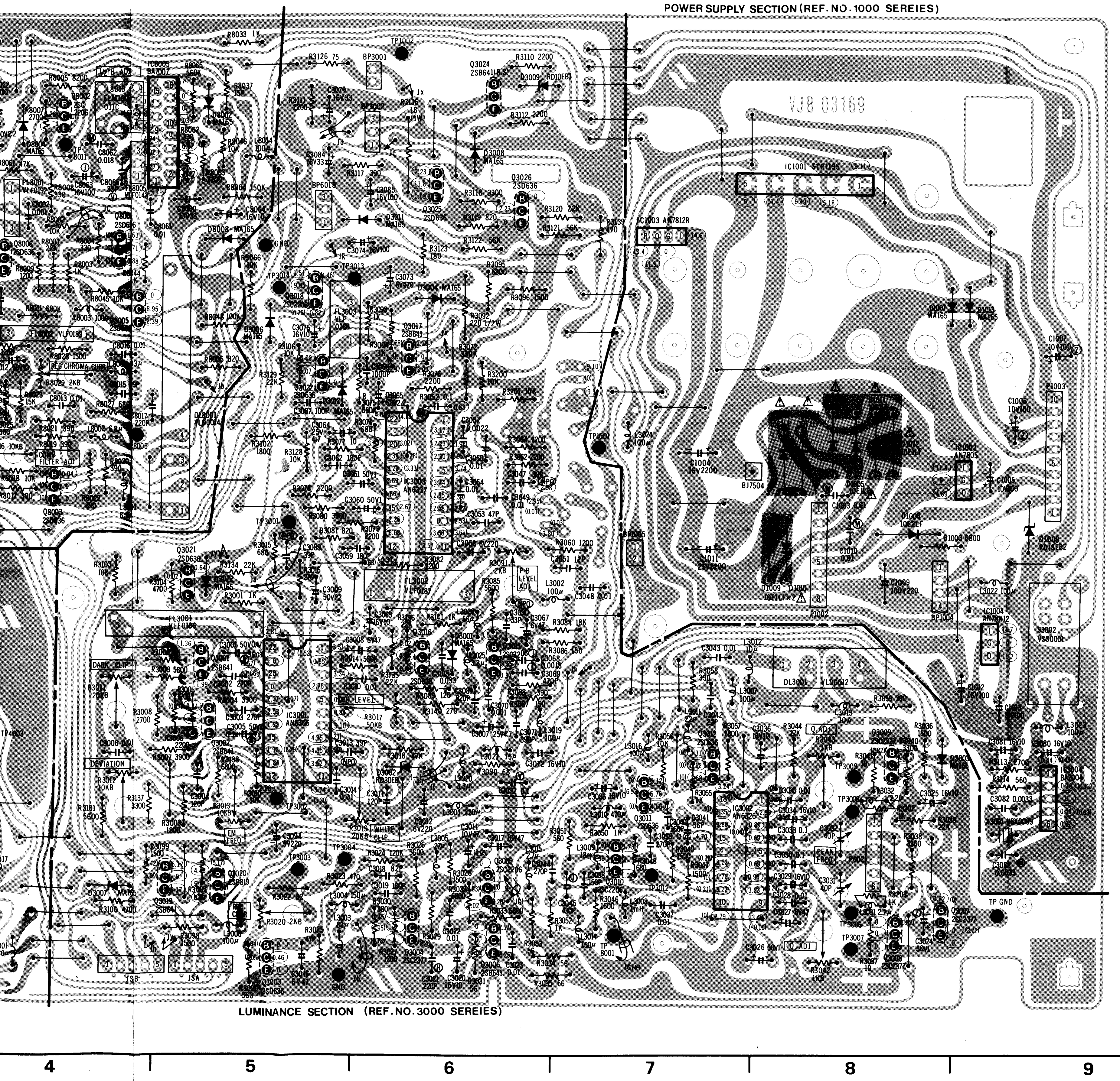
JSA

1	V-PULSE
2	SEARCH Ⓛ
3	SW PULSE
4	REF OUT
5	VSS OUT

JSB

1	AUDIO MUTE
2	REC 9V
3	DELAYED REC 9V
4	EXCEPT REC Ⓛ
5	DOC OUT

R SUPPLY BOARD (VEP03169B)


POWER SUPPLY SECTION (REF. NO. 1000 SERIES)
VJB 03169
IC1001 STR1195
IC1002 AN7805
IC1003 AN7812R
IC1004 AN7812
IC3001 AN6306
IC3002 AN6326
IC3003 AN6337
DL3001 VLD0012
FL3001 VLF0188
FL3002 VLF0187
TP1001
TP1002
TP3001
TP3002
TP3003
TP3004
TP3007
TP3009
TP3012
TP3013
TP3014
BP3001
BP3002
BP6018
BP1004
BP1005
P1002
P1003
P002
GND
TP GND
LUMINANCE SECTION (REF. NO. 3000 SEREIES)
4
5
6
7
8
9

Main C.B.A			
Power Supply Section		Q3016	B-6
		Q3017	D-6
IC1001	E-8	Q3018	D-5
IC1002	C-9	Q3019	A-5
IC1003	E-7	Q3020	A-5
IC1004	C-9	Q3021	C-5
Audio Section		Q3022	D-5
		Q3024	E-6
Q4001	A-3	Q3025	E-6
		Q3026	E-6
IC4001	C-3		
IC4002	C-3	IC3001	B-5
IC4003	C-3	IC3002	A-7
		IC3003	C-6
Luminance Section		IC3004	B-9
Q3001	B-5	Chrominance Section	
Q3002	B-5		
Q3003	A-5	Q8001	E-4
Q3004	A-6	Q8002	E-4
Q3005	A-6	Q8003	C-4
Q3006	A-6	Q8004	D-4
Q3007	A-8	Q8005	D-4
Q3008	A-8	Q8006	E-4
Q3009	B-8		
Q3010	B-7	IC8001	D-3
Q3011	B-7	IC8002	E-3
Q3012	B-7	IC8003	D-2
Q3015	B-6	IC8004	C-2
		IC8005	E-4

BP3002

1	P.B Ⓗ
2	GND
3	VIDEO IN/OUT

BP6018

1	VIDEO OUT
2	GND
3	+9V

P1003

1	———
2	CAP 18V
3	15V UNREG
4	REG 5V Ⓕ
5	———
6	POWER OFF Ⓛ
7	MOTOR GND
8	GND
9	REG 9V
10	REG 5V Ⓑ

P1002

1	AC 10V
2	AC 10V
3	AC 14V
4	AC 14V
5	AC 33V
6	DC 15V
7	GND
8	———

BP1004

1	+40V UNREG
2	+12V Ⓕ
3	+12V Ⓑ
4	GND

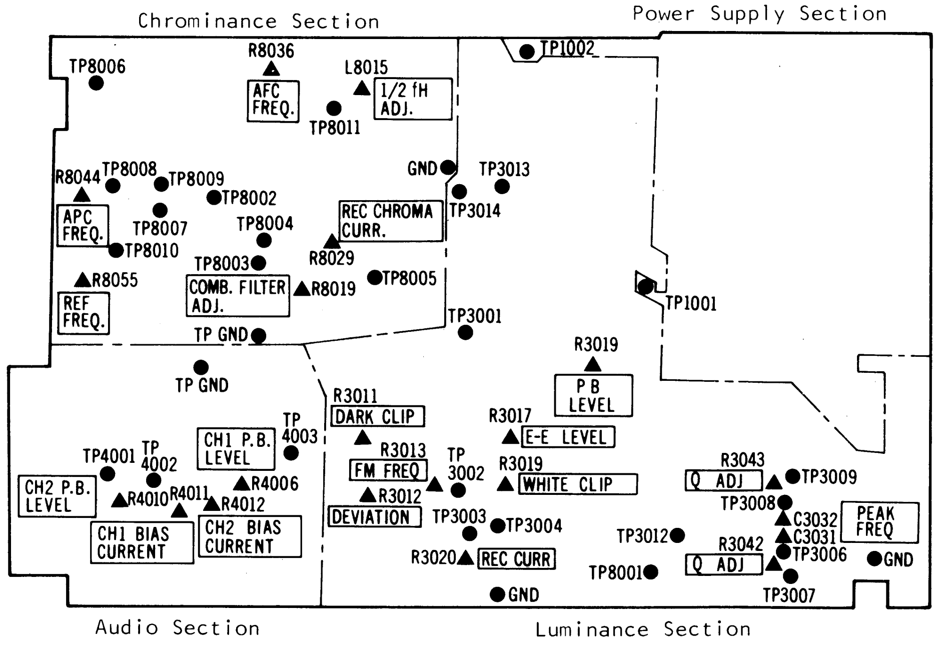
P1005

1	GND
2	GND

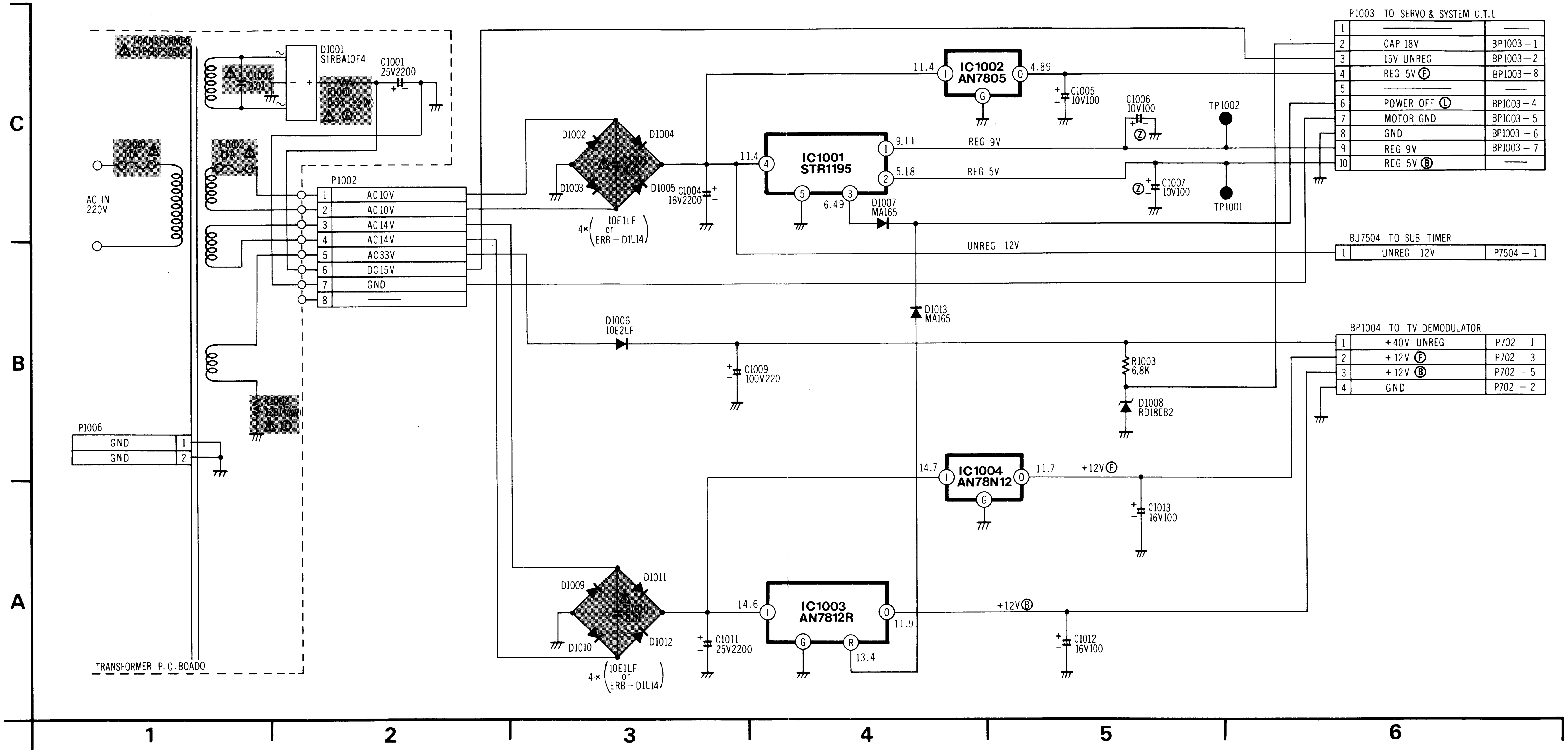
P002

1	VIDEO HEAD A
2	VIDEO HEAD A
3	GND
4	GND
5	VIDEO HEAD B
6	VIDEO HEAD B

Luminance, Chrominance, Audio & Power Supply P.C.B. Unit

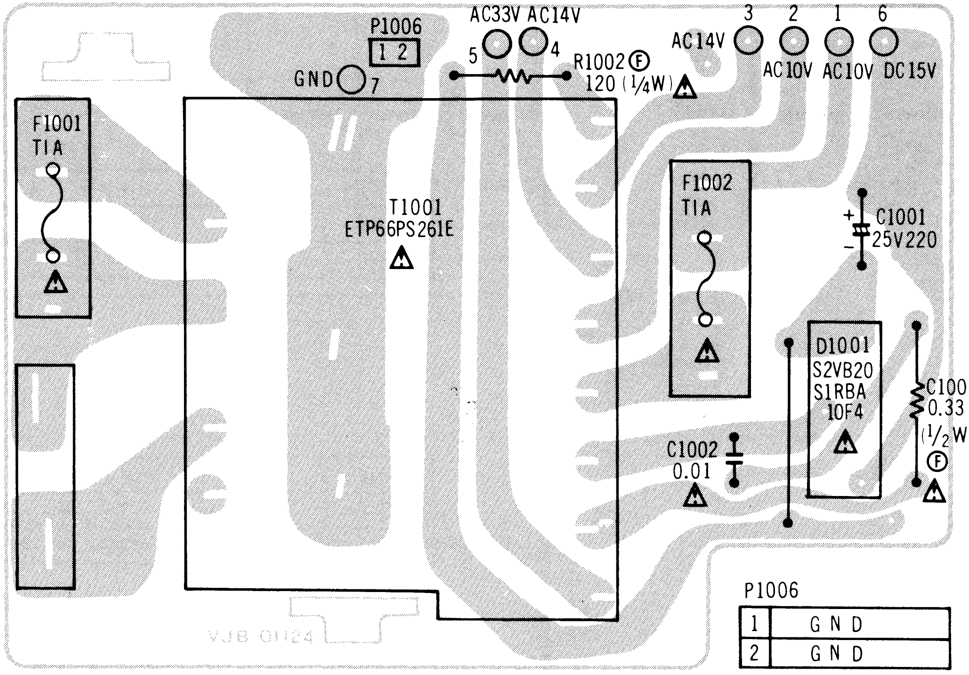

Chrominance Section
Power Supply Section
TP8006
R8036
AFC FREQ.
L8015
1/2 fH ADJ.
TP8011
TP1002
R8044
TP8008
TP8009
TP8002
APC FREQ.
TP8007
TP8010
TP8004
TP8003
R8029
REC CHROMA CURR.
GND
TP3013
TP3014
R8055
REF FREQ.
COMB. FILTER ADJ.
R8019
TP8005
TP1001
TP GND
TP3001
TP GND
R3019
P B LEVEL
R3011
DARK CLIP
R3017
E-E LEVEL
TP4001
TP 4002
CH1 P.B. LEVEL
TP 4003
CH2 P.B. LEVEL
R4010
R4011
R4006
R4012
CH1 BIAS CURRENT
CH2 BIAS CURRENT
R3013
FM FREQ
TP 3002
R3012
DEVIATION
R3019
WHITE CLIP
TP3003
TP3004
R3020
REC CURR
GND
R3043
Q ADJ
TP3009
TP3008
C3032
C3031
PEAK FREQ
TP3012
R3042
Q ADJ
TP3006
GND
TP8001
TP3007
Audio Section
Luminance Section

POWER SUPPLY SCHEMATIC DIAGRAM



C
B
A
1
2
3
4
5
6
TRANSFORMER
ETP66PS261E
D1001
SIRBA10F4
C1001
25V2200
C1002
0.01
R1001
0.33 (1/2W)
F
F1001
T1A
F1002
T1A
AC IN
220V
P1002
1 AC 10V
2 AC 10V
3 AC 14V
4 AC 14V
5 AC 33V
6 DC 15V
7 GND
8 ——
R1002
120 (1/4W)
F
P1006
GND 1
GND 2
TRANSFORMER P.C.BOADO
D1002
D1004
D1003
D1005
C1003
0.01
4× (10E1LF or ERB − D1L14)
C1004
16V2200
11.4
IC1001
STR1195
9.11
5.18
6.49
D1007
MA165
REG 9V
REG 5V
UNREG 12V
11.4
IC1002
AN7805
4.89
C1005
10V100
C1006
10V100
C1007
10V100
Z
TP1002
TP1001
P1003 TO SERVO & SYSTEM C.T.L
1 —— ——
2 CAP 18V BP1003 − 1
3 15V UNREG BP1003 − 2
4 REG 5V F BP1003 − 8
5 —— ——
6 POWER OFF L BP1003 − 4
7 MOTOR GND BP1003 − 5
8 GND BP1003 − 6
9 REG 9V BP1003 − 7
10 REG 5V B ——
BJ7504 TO SUB TIMER
1 UNREG 12V P7504 − 1
D1013
MA165
D1006
10E2LF
C1009
100V220
R1003
6.8K
D1008
RD18EB2
BP1004 TO TV DEMODULATOR
1 +40V UNREG P702 − 1
2 +12V F P702 − 3
3 +12V B P702 − 5
4 GND P702 − 2
14.7
IC1004
AN78N12
11.7
+12V F
C1013
16V100
D1009
D1011
D1010
D1012
C1010
0.01
4× (10E1LF or ERB − D1L14)
C1011
25V2200
14.6
IC1003
AN7812R
11.9
13.4
+12V B
C1012
16V100
I
O
G
R

POWER TRANSFORMER P.C.B. (VJB01124)


P1006
1 2
GND
7
AC33V
AC14V
5
4
R1002 Ⓕ
120 (1/4W)
AC14V
3
2
1
6
AC10V
AC10V
DC15V
F1001
TIA
T1001
ETP66PS261E
F1002
TIA
C1001
25V220
D1001
S2VB20
S1RBA
10F4
C1001
0.33
(1/2W)
Ⓕ
C1002
0.01
VJB 01124

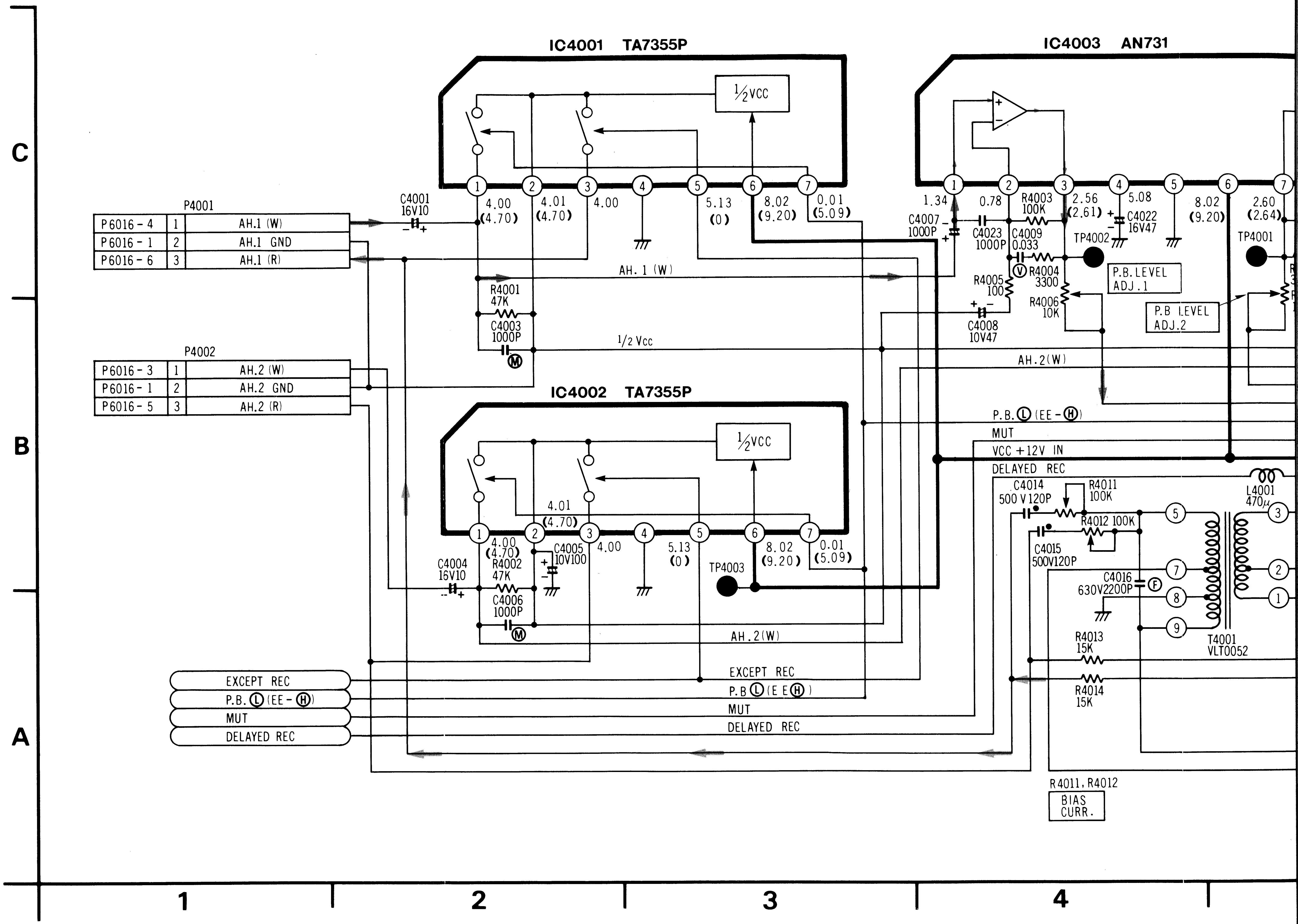
P1006

1	GND
2	GND

AUDIO SCHEMATIC DIAGRAM

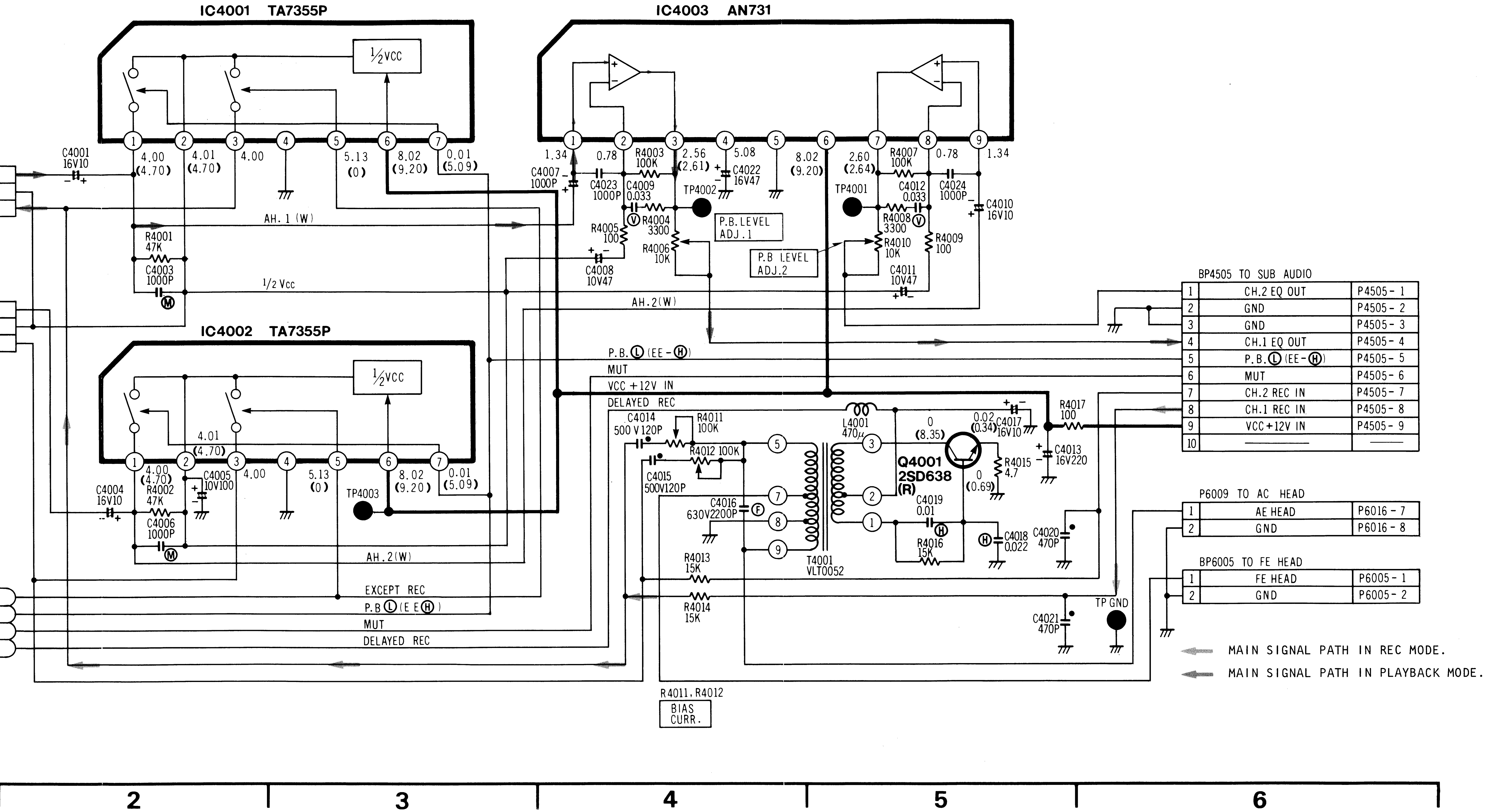
Audio	
Q4001	B-5
IC4001	C-2
IC4002	B-2
IC4003	C-4

Power	
IC1001	C-4
IC1002	C-5
IC1003	A-4
IC1004	B-5


IC4001 TA7355P
½VCC
IC4003 AN731
C
B
A
1
2
3
4
P4001
P6016-4 1 AH.1 (W)
P6016-1 2 AH.1 GND
P6016-6 3 AH.1 (R)
P4002
P6016-3 1 AH.2 (W)
P6016-1 2 AH.2 GND
P6016-5 3 AH.2 (R)
C4001 16V10
4.00 (4.70)
4.01 (4.70)
4.00
5.13 (0)
8.02 (9.20)
0.01 (5.09)
AH. 1 (W)
R4001 47K
C4003 1000P
M
1/2 Vcc
IC4002 TA7355P
½VCC
4.01 (4.70)
4.00 (4.70)
C4004 16V10
R4002 47K
C4005 10V100
C4006 1000P
M
4.00
5.13 (0)
TP4003
8.02 (9.20)
0.01 (5.09)
AH.2(W)
EXCEPT REC
P.B. L (EE-H)
MUT
DELAYED REC
1.34
0.78
C4007 1000P
C4023 1000P
R4003 100K
C4009 0.033
V
R4004 3300
R4005 100
C4008 10V47
R4006 10K
2.56 (2.61)
5.08
C4022 16V47
TP4002
P.B.LEVEL ADJ.1
8.02 (9.20)
2.60 (2.64)
TP4001
P.B LEVEL ADJ.2
AH.2(W)
P.B. L (EE-H)
MUT
VCC +12V IN
DELAYED REC
C4014 500V120P
R4011 100K
R4012 100K
C4015 500V120P
C4016 630V2200P
F
L4001 470μ
T4001 VLT0052
R4013 15K
R4014 15K
R4011, R4012
BIAS CURR.
EXCEPT REC
P.B L (EE H)
MUT
DELAYED REC

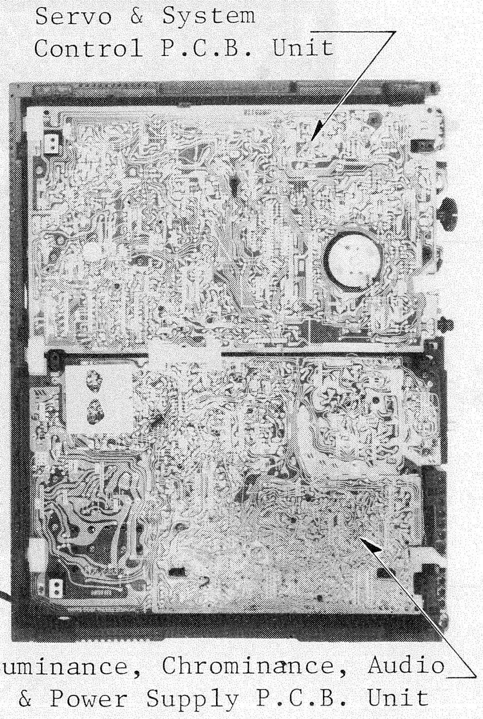
AM

THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS STOP MODE
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK

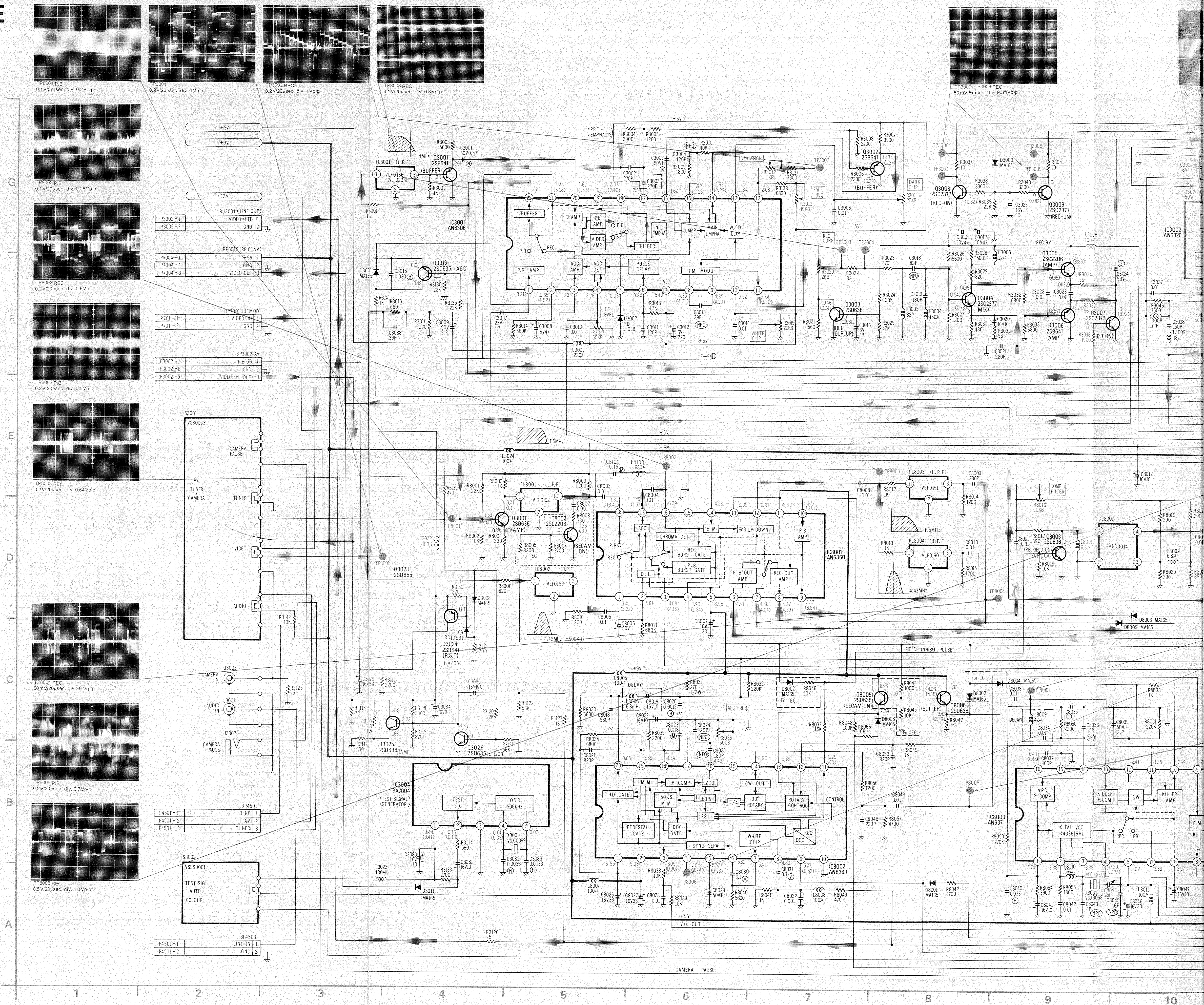

IC4001 TA7355P
½VCC
4.00 (4.70)
4.01 (4.70)
4.00
5.13 (0)
8.02 (9.20)
0.01 (5.09)
C4001 16V10
R4001 47K
C4003 1000P
AH. 1 (W)
1/2 Vcc
IC4002 TA7355P
½VCC
4.01 (4.70)
4.00 (4.70)
4.00
5.13 (0)
8.02 (9.20)
0.01 (5.09)
C4004 16V10
R4002 47K
C4005 10V100
C4006 1000P
TP4003
AH. 2 (W)
EXCEPT REC
P.B Ⓛ (E E Ⓗ)
MUT
DELAYED REC
IC4003 AN731
1.34
0.78
2.56 (2.61)
5.08
8.02 (9.20)
2.60 (2.64)
0.78
1.34
C4007 1000P
C4023 1000P
C4009 0.033
R4003 100K
R4004 3300
R4005 100
R4006 10K
C4008 10V47
C4022 16V47
TP4002
P.B. LEVEL ADJ. 1
TP4001
P.B LEVEL ADJ. 2
R4007 100K
C4012 0.033
C4024 1000P
C4010 16V10
R4008 3300
R4010 10K
R4009 100
C4011 10V47
AH. 2 (W)
P.B. Ⓛ (EE-Ⓗ)
MUT
VCC +12V IN
DELAYED REC
C4014 500 V 120P
R4011 100K
R4012 100K
C4015 500V120P
C4016 630V2200P
L4001 470μ
T4001 VLT0052
Q4001 2SD638 (R)
0 (8.35)
0.02 (0.34)
0 (0.69)
C4017 16V10
R4017 100
C4013 16V220
R4015 4.7
C4019 0.01
R4016 15K
C4018 0.022
C4020 470P
R4013 15K
R4014 15K
C4021 470P
TP GND
R4011, R4012 BIAS CURR.
BP4505 TO SUB AUDIO
1 CH.2 EQ OUT P4505-1
2 GND P4505-2
3 GND P4505-3
4 CH.1 EQ OUT P4505-4
5 P.B. Ⓛ (EE-Ⓗ) P4505-5
6 MUT P4505-6
7 CH.2 REC IN P4505-7
8 CH.1 REC IN P4505-8
9 VCC+12V IN P4505-9
10
P6009 TO AC HEAD
1 AE HEAD P6016-7
2 GND P6016-8
BP6005 TO FE HEAD
1 FE HEAD P6005-1
2 GND P6005-2
MAIN SIGNAL PATH IN REC MODE.
MAIN SIGNAL PATH IN PLAYBACK MODE.
2
3
4
5
6

LUMINANCE & CHROMINANCE SCHEMATIC DIAGRAM

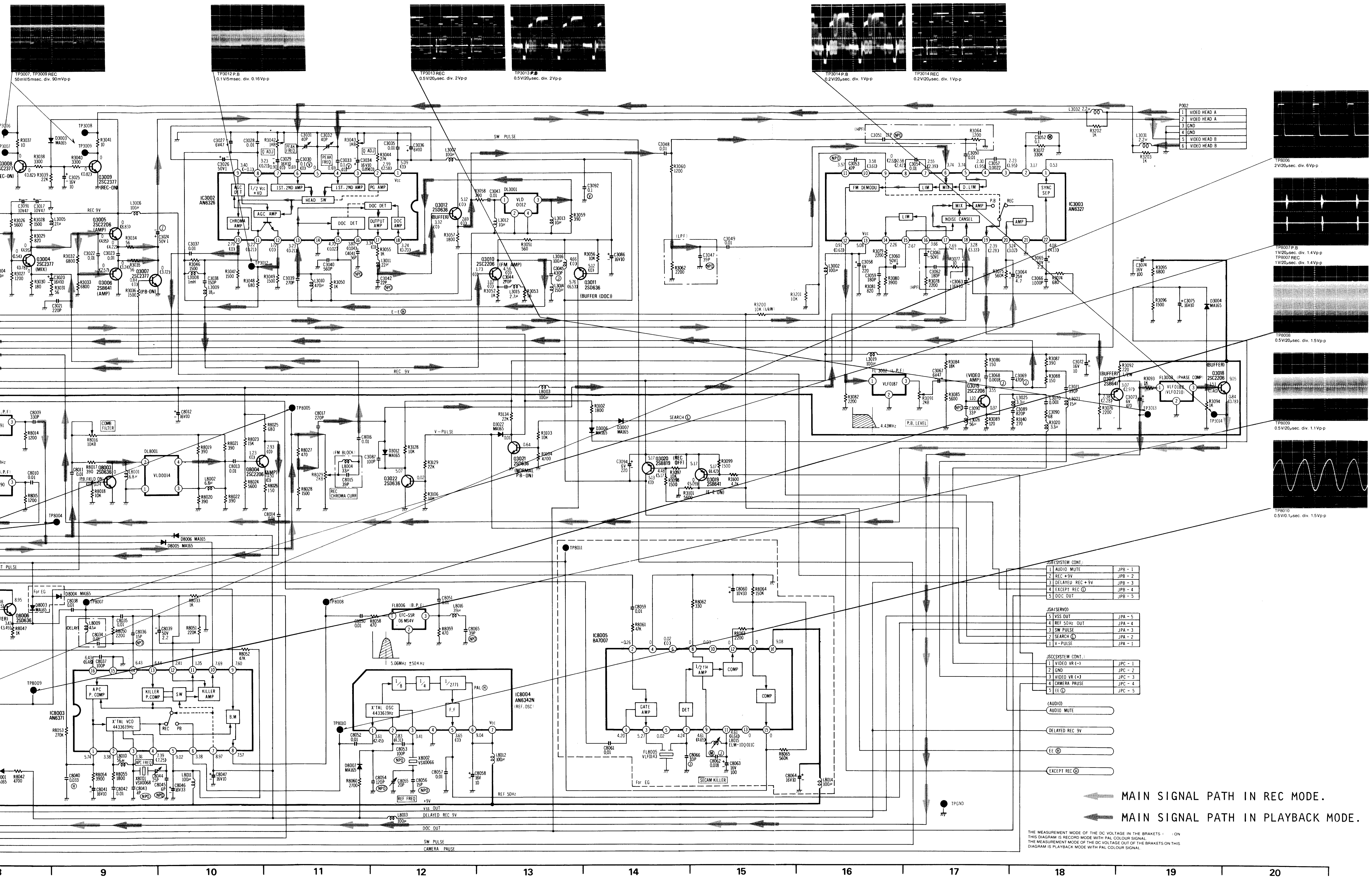
Luminance, Chrominance	
Luminance Section	
Q3001	G-5
Q3002	G-9
Q3003	F-8
Q3004	F-9
Q3005	F-10
Q3006	F-10
Q3007	F-10
Q3008	G-9
Q3009	G-10
Q3010	F-14
Q3011	F-14
Q3012	G-13
Q3015	E-18
Q3016	F-5
Q3017	E-20
Q3018	E-21
Q3019	D-16
Q3020	D-15
Q3021	D-14
Q3022	D-13
Q3024	C-5
Q3025	C-5
Q3026	B-5
Q3027	D-20
Q3028	D-20
IC3001	G-6
IC3002	G-12
IC3003	G-18
IC3004	B-5
Chrominance Section	
Q8001	D-5
Q8002	D-6
Q8003	D-10
Q8004	D-12
Q8005	C-9
Q8006	C-9
IC8001	D-7
IC8002	B-7
IC8003	B-10
IC8004	B-13
IC8005	B-16



Servo & System Control P.C.B. Unit
Luminance, Chrominance, Audio & Power Supply P.C.B. Unit



TP8001 P.B 0.1V/5msec. div. 0.2Vp-p
TP3001 0.2V/20μsec. div. 1Vp-p
TP3002 REC 0.2V/20μsec. div. 1Vp-p
TP3003 REC 0.1V/20μsec. div. 0.3Vp-p
TP3007, TP3009 REC 50mV/5msec. div. 90mVp-p
TP8002 P.B 0.1V/20μsec. div. 0.25Vp-p
TP8002 REC 0.2V/20μsec. div. 0.6Vp-p
TP8003 P.B 0.2V/20μsec. div. 0.5Vp-p
TP8003 REC 0.2V/20μsec. div. 0.64Vp-p
TP8004 REC 50mV/20μsec. div. 0.2Vp-p
TP8005 P.B 0.2V/20μsec. div. 0.7Vp-p
TP8005 REC 0.5V/20μsec. div. 1.3Vp-p
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
+5V
+9V
+12V
RJ3001 (LINE OUT)
VIDEO OUT
GND
BP6018 (RF CONV)
BP7001 (DEMOD)
BP3002 AV
S3001 VSS0053
CAMERA PAUSE
AV TUNER CAMERA
TUNER
VIDEO
AUDIO
J3003 CAMERA IN
J3001 AUDIO IN
J3002 CAMERA PAUSE
BP4501
LINE
AV
TUNER
S3002 VSS0001
TEST SIG
AUTO
COLOUR
BP4503
LINE IN
GND
FL3001 (L.P.F) VLF0208
Q3001 2SB641 (BUFFER)
IC3001 AN6306
BUFFER
CLAMP
P.B AMP
VIDEO AMP
N.L EMPHA
MAIN EMPHA
W/D CLIP
AGC AMP
AGC DET
PULSE DELAY
FM MODU
PRE-EMPHASIS
DEVIATION
DARK CLIP
WHITE CLIP
FM FREQ
REC CURR
Q3002 2SB641 (BUFFER)
Q3016 2SD636 (AGC)
Q3003 2SD636 (REC CUR. UP)
Q3008 2SC2377 (REC-ON)
Q3009 2SC2377 (REC-ON)
Q3004 2SC2377 (MIX)
Q3005 2SC2206 (AMP)
Q3006 2SB641 (AMP)
Q3007 2SC2377 (PB-ON)
IC3002 AN6326
Q3023 2SD655
Q3024 2SB641 (R.S.T) (U.V/ON)
Q3025 2SD638 (AMP)
Q3026 2SD636 (E-E/ON)
IC3004 BA7004 (TEST SIGNAL GENERATOR)
TEST SIG
OSC 500kHz
X3001 VSX0099
FL8001 (L.P.F) VLF0192
FL8002 (B.P.F) VLF0189
Q8001 2SD636 (AMP)
Q8002 2SC2206 (SECAM ON)
IC8001 AN6360
ACC
CHROMA DET
B.M
6dB UP/DOWN
REC BURST GATE
P.B BURST GATE
DET
P.B OUT AMP
REC OUT AMP
P.B AMP
FL8003 (L.P.F) VLF0191
FL8004 (B.P.F) VLF0190
COMB FILTER
Q8003 2SD636 (P.B FIELD ON)
DL8001 VLD0014
1.5MHz
4.43MHz
FIELD INHIBIT PULSE
Q8005 2SD636 (SECAM ON)
Q8006 2SD636 (BUFFER)
IC8002 AN6363
H.D GATE
P. COMP
VCO
CW OUT
90° ROTARY
ROTARY CONTROL
PEDESTAL GATE
DOC GATE
SYNC SEPA
WHITE CLIP
REC DOC
CONTROL
AFC FREQ
IC8003 AN6371
APC P. COMP
KILLER P.COMP
SW
KILLER AMP
X'TAL VCO 4433619Hz
REC
PB
X8001 VSX0068
CAMERA PAUSE
Vss OUT

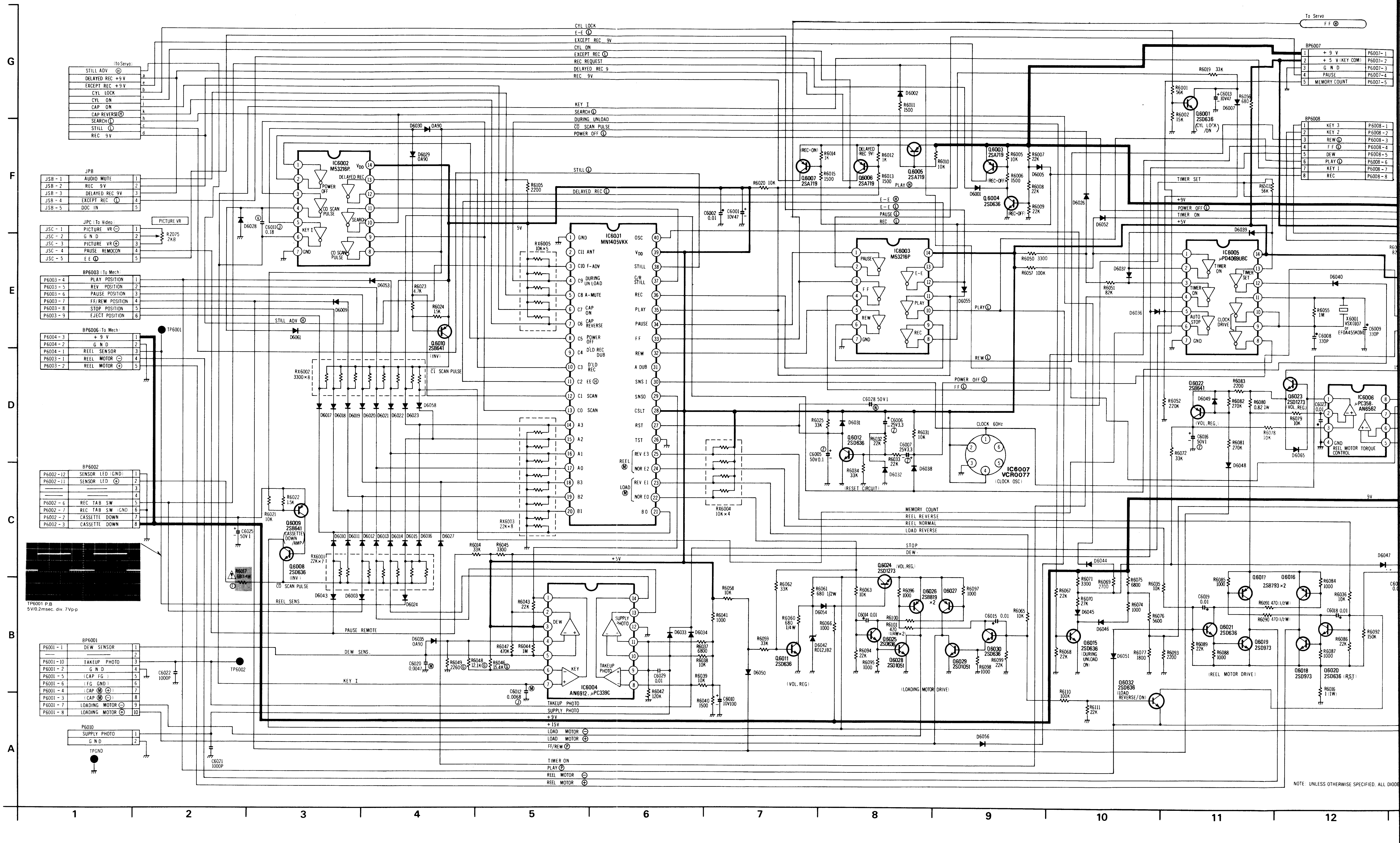

TP3007, TP3009 REC
50mV/5msec. div. 90mVp-p
TP3012 P.B
0.1V/5msec. div. 0.16Vp-p
TP3013 REC
0.5V/20μsec. div. 2Vp-p
TP3013 P.B
0.5V/20μsec. div. 2Vp-p
TP3014 P.B
0.2V/20μsec. div. 1Vp-p
TP3014 REC
0.2V/20μsec. div. 1Vp-p
TP8006
2V/20μsec. div. 6Vp-p
TP8007 P.B
1V/20μsec. div. 1.4Vp-p
TP8007 REC
1V/20μsec. div. 1.4Vp-p
TP8008
0.5V/20μsec. div. 1.5Vp-p
TP8009
0.5V/20μsec. div. 1.1Vp-p
TP8010
0.5V/0.1μsec. div. 1.5Vp-p
P002
1 VIDEO HEAD A
2 VIDEO HEAD A
3 GND
4 GND
5 VIDEO HEAD B
6 VIDEO HEAD B
IC3002 AN6326
IC3003 AN6327
IC8003 AN6371
IC8004 AN6342N (REF. OSC)
IC8005 BA7007
Q3004 2SC2377 (MIX)
Q3005 2SC2206 (AMP)
Q3006 2SB641 (AMP)
Q3007 2SC2377 (PB-ON)
Q3008 2SC2377 (REC-ON)
Q3009 2SC2377 (REC-ON)
Q3010 2SC2206 (FM AMP)
Q3011 2SD636 (BUFFER (DOC))
Q3012 2SD636 (BUFFER)
Q3015 2SC2206 (VIDEO AMP)
Q3017 2SB641 (BUFFER)
Q3018 2SC2206 (BUFFER)
Q3019 2SB641 (E-E ON)
Q3020 2SB819 (REC OFF)
Q3021 2SD636 (NORMAL PB-ON)
Q3022 2SD636
Q8003 2SD636 (P.B FIELD ON)
Q8004 2SC2206 (AMP)
Q8006 2SD636
AGC DET
1/2 Vcc +VD
1ST. 2ND AMP
PEAK FREQ
Q ADJ
PG AMP
HEAD SW
DOC DET
OUTPUT AMP
DOC AMP
CHROMA AMP
AGC AMP
DL3001 VLD 0012
FM DEMODU
LIM
MIX
D.LIM
SYNC SEP
NOISE CANSEL
AMP
FL3002 (L.P.F) VLF0187
FL3003 (PHASE COMP) VLF0188 (VLF0210)
4.43MHz
P.B. LEVEL
SW PULSE
REC 9V
E-E Ⓗ
SEARCH Ⓛ
V-PULSE
(HPF)
(LPF)
COMB FILTER
DL8001 VLD0014
(FM BLOCK)
REC CHROMA CURR
FL8006 (B.P.F) EFC-S5R 06 MS4V
5.06MHz ±50KHz
APC P.COMP
KILLER P.COMP
SW
KILLER AMP
B.M
X'TAL VCO 4433619Hz
REC
PB
APC FREQ
X8001 VSX0068
X'TAL OSC 4433619Hz
1/8
1/4
1/2271
F.F
PAL Ⓗ
REF FREQ
X8002 VSX0066
1/2 FH AMP
COMP
GATE AMP
DET
FL8005 VLF0143
L8015 ELM-10Q011C
SECAM KILLER
For EG
TP8011
TPGND
REF 50Hz
+9V
VSS OUT
DELAYED REC 9V
DOC OUT
SW PULSE
CAMERA PAUSE
JSB (SYSTEM CONT.)
1 AUDIO MUTE JPB - 1
2 REC +9V JPB - 2
3 DELAYED REC +9V JPB - 3
4 EXCEPT REC Ⓛ JPB - 4
5 DOC OUT JPB - 5
JSA (SERVO)
5 VSS OUT JPA - 5
4 REF 50Hz OUT JPA - 4
3 SW PULSE JPA - 3
2 SEARCH Ⓛ JPA - 2
1 V-PULSE JPA - 1
JSC (SYSTEM CONT.)
1 VIDEO VR (−) JPC - 1
2 GND JPC - 2
3 VIDEO VR (+) JPC - 3
4 CAMERA PAUSE JPC - 4
5 EE Ⓛ JPC - 5
(AUDIO)
AUDIO MUTE
DELAYED REC 9V
EE Ⓗ
EXCEPT REC Ⓗ
8
9
10
11
12
13
14
15
16
17
18
19
20

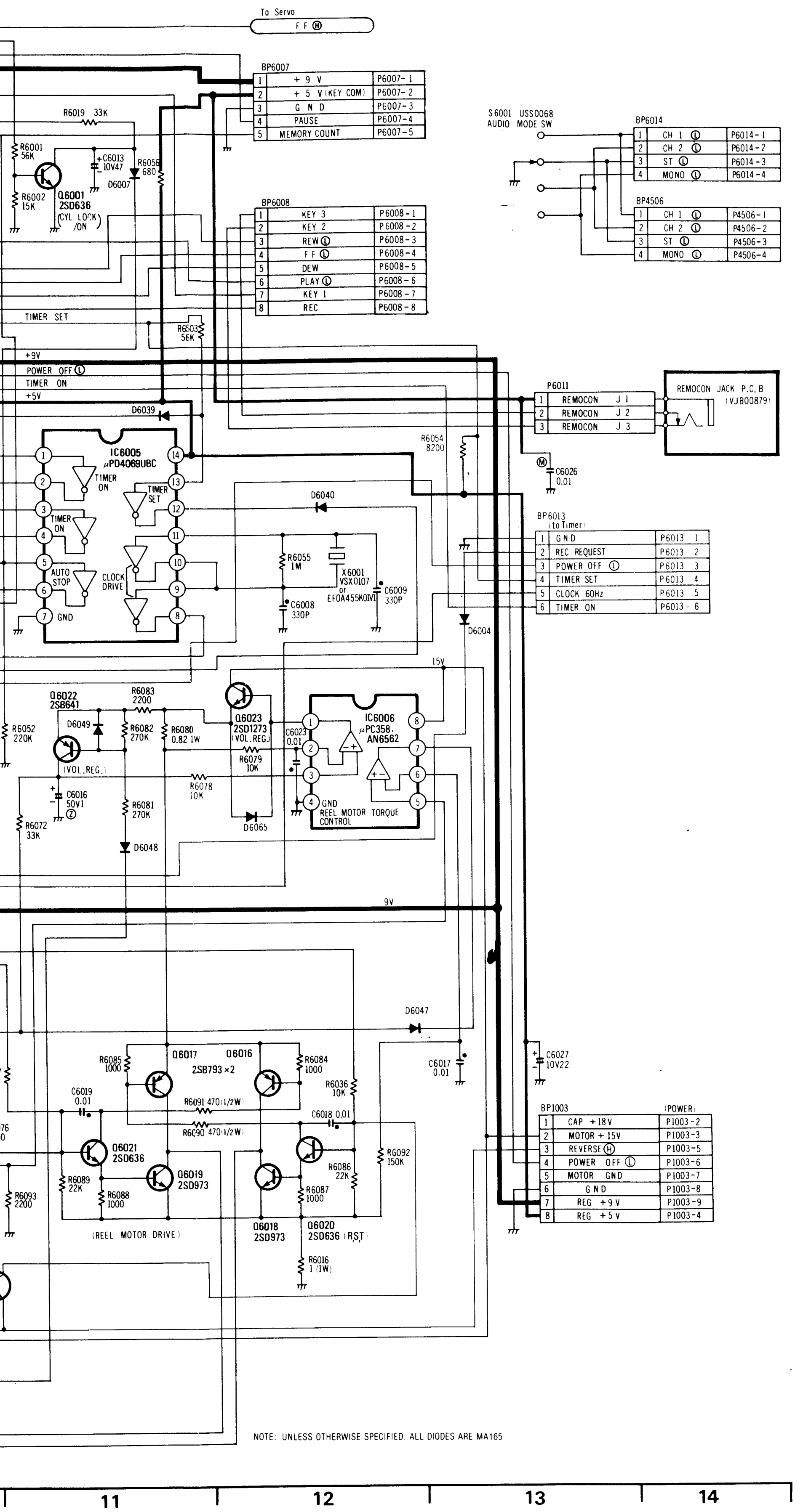
MAIN SIGNAL PATH IN REC MODE.

MAIN SIGNAL PATH IN PLAYBACK MODE.

THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRAKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRAKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.

SYSTEM CONTROL SCHEMATIC DIAGRAM


G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
(to Servo)
STILL ADV Ⓗ
DELAYED REC +9V
EXCEPT REC +9V
CYL LOCK
CYL ON
CAP ON
CAP REVERSE Ⓗ
SEARCH Ⓛ
STILL Ⓛ
REC 9V
JPB
JSB-1 AUDIO MUTE
JSB-2 REC 9V
JSB-3 DELAYED REC 9V
JSB-4 EXCEPT REC Ⓛ
JSB-5 DOC IN
JPC (To Video)
PICTURE VR
JSC-1 PICTURE VR ⊖
JSC-2 GND
JSC-3 PICTURE VR ⊕
JSC-4 PAUSE REMOCON
JSC-5 EE Ⓛ
R2075 2KB
BP6003 (To Mech)
P6003-4 PLAY POSITION
P6003-5 REV POSITION
P6003-6 PAUSE POSITION
P6003-7 FF/REW POSITION
P6003-8 STOP POSITION
P6003-9 EJECT POSITION
BP6006 (To Mech)
P6004-3 +9V
P6004-2 GND
P6004-1 REEL SENSOR
P6003-1 REEL MOTOR ⊖
P6003-2 REEL MOTOR ⊕
TP6001
BP6002
P6002-12 SENSOR LED (GND)
P6002-11 SENSOR LED ⊕
P6002-6 REC TAB SW
P6002-7 REC TAB SW (GND)
P6002-2 CASSETTE DOWN
P6002-3 CASSETTE DOWN
TP6001 P.B
5V/0.2msec. div. 7Vp-p
R6017 680 1/4W
BP6001
P6001-1 DEW SENSOR
P6001-10 TAKEUP PHOTO
P6001-2 GND
P6001-5 (CAP FG)
P6001-6 (FG GND)
P6001-4 (CAP Ⓜ ⊕)
P6001-3 (CAP Ⓜ ⊖)
P6001-7 LOADING MOTOR ⊖
P6001-8 LOADING MOTOR ⊕
TP6002
C6022 1000P
P6010
SUPPLY PHOTO
GND
TPGND
C6021 1000P
CYL LOCK
E-E Ⓛ
EXCEPT REC 9V
CYL ON
EXCEPT REC Ⓛ
REC REQUEST
DELAYED REC 9
REC 9V
KEY I
SEARCH Ⓛ
DURING UNLOAD
CO SCAN PULSE
POWER OFF Ⓛ
STILL Ⓛ
DELAYED REC Ⓛ
D6030 OA90
D6029 OA90
IC6002 M53216P
VDD
POWER OFF
DELAYED REC
CO SCAN PULSE
SEARCH
KEY I
CO SCAN PULSE
GND
D6028
C6011 0.18
D6053
D6009
R6023 4.7K
R6024 15K
Q6010 2SB641 (INV)
STILL ADV Ⓗ
D6061
R6105 2200
5V
RX6005 10K×5
IC6001 MN1405VKK
GND
C11 ANT
C10 F-ADV
C9 DURING UN LOAD
C8 A-MUTE
C7 CAP ON
C6 CAP REVERSE
C5 POWER OFF
C4 DLD REC DUB
C3 D'LD REC
C2 EE Ⓗ
C1 SCAN
C0 SCAN
A3
A2
A1
A0
B3
B2
B1
OSC
VDD
STILL
C/R STILL
REC
PLAY
PAUSE
FF
REW
A DUB
SNS I
SNS0
CSLT
RST
TST
REEL Ⓜ REV E3
NOR E2
LOAD Ⓜ REV E1
NOR E0
B0
RX6002 3300×8
C1 SCAN PULSE
D6017 D6018 D6019 D6020 D6021 D6022 D6023
D6058
RX6003 22K×8
RX6004 10K×4
R6020 10K
C6002 0.01
C6001 10V47
R6022 1.5K
R6021 10K
Q6009 2SB641 (CASSETTE DOWN /AMP)
Q6008 2SD636 (INV)
C6025 50V1
RX6001 22K×7
D6010 D6011 D6012 D6013 D6014 D6015 D6016 D6027
D6043
D6003
D6024
CO SCAN PULSE
REEL SENS
PAUSE REMOTE
DEW SENS
KEY I
D6035 OA90
C6020 0.0047
R6049 2260
R6048 12.1K
R6046 15.4K
R6047 470K
R6044 1M
R6043 22K
R6014 33K
R6045 3300
+5V
IC6004 AN6912, μPC339C
DEW
SUPPLY PHOTO
TAKEUP PHOTO
KEY
C6012 0.0068
C6029 0.01
R6042 120K
D6033
D6034
R6037 6800
R6038 10K
R6039 10K
R6040 1500
C6010 10V100
R6058 10K
R6041 1000
D6050
TAKEUP PHOTO
SUPPLY PHOTO
+9V
+15V
LOAD MOTOR ⊖
LOAD MOTOR ⊕
FF/REW Ⓟ
TIMER ON
PLAY Ⓟ
REEL MOTOR ⊖
REEL MOTOR ⊕
D6002
R6011 1500
(REC-ON)
R6014 1K
R6015 1500
Q6007 2SA719
DELAYED REC 9V
R6012 1K
R6013 1500
Q6006 2SA719
Q6005 2SA719
PLAY Ⓗ
R6010 10K
Q6003 2SA719
R6005 10K
R6007 22K
R6006 1500
(REC-OFF)
D6005
D6001
Q6004 2SD636
R6008 22K
R6009 22K
D6026
D6052
E-E Ⓗ
E-E Ⓛ
PAUSE Ⓛ
REC Ⓛ
IC6003 M53216P
PAUSE
E-E
FF
PLAY
REW
REC
GND
D6055
PLAY Ⓛ
REW Ⓛ
POWER OFF Ⓛ
FF Ⓛ
C6028 50V1
R6025 33K
D6031
C6006 25V3.3
Q6012 2SD636
R6032 22K
R6031 10K
C6007 25V3.3
R6033 22K
C6005 50V0.1
R6034 33K
D6032
D6038
(RESET CIRCUIT)
CLOCK 60Hz
IC6007 VCR0077 (CLOCK OSC)
R6050 3300
R6057 100K
To Servo
FF Ⓗ
BP6007
+9V
+5V (KEY COM)
GND
PAUSE
MEMORY COUNT
P6007-1 P6007-2 P6007-3 P6007-4 P6007-5
R6019 33K
R6001 56K
R6002 15K
C6013 10V47
R6056 680
D6007
Q6001 2SD636 (CYL LOCK /ON)
BP6008
KEY 3
KEY 2
REW Ⓛ
FF Ⓛ
DEW
PLAY Ⓛ
KEY 1
REC
P6008-1 P6008-2 P6008-3 P6008-4 P6008-5 P6008-6 P6008-7 P6008-8
TIMER SET
R6053 56K
+9V
POWER OFF Ⓛ
TIMER ON
+5V
D6039
D6037
R6051 82K
D6036
IC6005 μPD4069UBC
TIMER ON
TIMER SET
AUTO STOP
CLOCK DRIVE
GND
D6040
R6055 1M
X6001 VSX0107 or EF0A455K0W
C6008 330P
C6009 330P
Q6022 2SB641
R6083 2200
D6049
R6082 270K
R6080 0.82 1W
Q6023 2SD1273 (VOL.REG)
R6079 10K
C6023 0.01
IC6006 μPC358, AN6562
R6052 220K
(VOL.REG.)
R6078 10K
C6016 50V1
R6072 33K
R6081 270K
D6048
D6065
REEL MOTOR TORQUE CONTROL
9V
MEMORY COUNT
REEL REVERSE
REEL NORMAL
LOAD REVERSE
STOP
DEW
D6044
D6047
R6062 33K
R6061 680 1/2W
Q6024 2SD1273 (VOL.REG)
R6063 10K
R6096 1000
Q6026 2SB819 ×2
Q6027
R6097 1000
R6060 680 1/4W
D6054
R6066 1000
C6014 0.01
R6100
R6101 470 (1/4W×2)
R6059 33K
Q6011 2SD636 (VOL.REG)
D6042 RD12JB2
R6094 22K
R6095 1000
Q6025 2SD636
Q6028 2SD1051
Q6029 2SD1051
C6015 0.01
Q6030 2SD636
R6099 22K
R6098 1000
R6065 10K
(LOADING MOTOR DRIVE)
D6056
R6067 22K
R6071 3300
R6069 2700
R6075 6800
R6035 10K
R6070 27K
D6045
D6046
R6074 1000
R6076 5600
R6068 22K
Q6015 2SD636 (DURING UNLOAD ON)
D6051
R6077 1800
R6093 2200
R6110 100K
R6111 22K
Q6032 2SD636 (LOAD REVERSE/ON)
R6085 1000
Q6017 Q6016
2SB793 ×2
R6084 1000
R6091 470 (1/2W)
R6090 470 (1/2W)
R6036 10K
C6019 0.01
C6018 0.01
Q6021 2SD636
Q6019 2SD973
R6089 22K
R6088 1000
R6087 1000
R6086 22K
R6092 150K
Q6018 2SD973
Q6020 2SD636 (RST)
R6016 1 (1W)
(REEL MOTOR DRIVE)
NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODE


To Servo
F F Ⓗ
BP6007
1 + 9 V P6007-1
2 + 5 V (KEY COM) P6007-2
3 G N D P6007-3
4 PAUSE P6007-4
5 MEMORY COUNT P6007-5
R6019 33K
R6001 56K
C6013 10V47
R6056 680
D6007
R6002 15K
Q6001 2SD636 (CYL LOCK /ON)
S6001 USS0068 AUDIO MODE SW
BP6014
1 CH 1 Ⓛ P6014-1
2 CH 2 Ⓛ P6014-2
3 ST Ⓛ P6014-3
4 MONO Ⓛ P6014-4
BP4506
1 CH 1 Ⓛ P4506-1
2 CH 2 Ⓛ P4506-2
3 ST Ⓛ P4506-3
4 MONO Ⓛ P4506-4
BP6008
1 KEY 3 P6008-1
2 KEY 2 P6008-2
3 REW Ⓛ P6008-3
4 F F Ⓛ P6008-4
5 DEW P6008-5
6 PLAY Ⓛ P6008-6
7 KEY 1 P6008-7
8 REC P6008-8
TIMER SET
R6503 56K
+9V
POWER OFF Ⓛ
TIMER ON
+5V
D6039
P6011
1 REMOCON J 1
2 REMOCON J 2
3 REMOCON J 3
REMOCON JACK P.C.B (VJB00879)
R6054 8200
Ⓜ C6026 0.01
IC6005 μPD4069UBC
TIMER ON
TIMER SET
TIMER ON
AUTO STOP
CLOCK DRIVE
GND
D6040
R6055 1M
X6001 VSX0107 or EF0A455K01V1
C6008 330P
C6009 330P
BP6013 (to Timer)
1 GND P6013 1
2 REC REQUEST P6013 2
3 POWER OFF Ⓛ P6013 3
4 TIMER SET P6013 4
5 CLOCK 60Hz P6013 5
6 TIMER ON P6013-6
D6004
15V
Q6022 2SB641 (VOL.REG.)
R6083 2200
D6049
R6082 270K
R6080 0.82 1W
Q6023 2SD1273 (VOL.REG.)
C6023 0.01
R6079 10K
R6078 10K
IC6006 μPC358, AN6562
GND
REEL MOTOR TORQUE CONTROL
R6052 220K
C6016 50V1 Ⓩ
R6081 270K
R6072 33K
D6065
D6048
9V
D6047
R6085 1000
Q6017 Q6016 2SB793×2
R6084 1000
R6036 10K
C6017 0.01
C6027 10V22
C6019 0.01
R6091 470(1/2W)
R6090 470(1/2W)
C6018 0.01
Q6021 2SD636
Q6019 2SD973
R6092 150K
R6086 22K
R6089 22K
R6088 1000
R6087 1000
R6093 2200
(REEL MOTOR DRIVE)
Q6018 2SD973
Q6020 2SD636 (RST)
R6016 1 (1W)
BP1003 (POWER)
1 CAP +18V P1003-2
2 MOTOR + 15V P1003-3
3 REVERSE Ⓗ P1003-5
4 POWER OFF Ⓛ P1003-6
5 MOTOR GND P1003-7
6 GND P1003-8
7 REG +9V P1003-9
8 REG +5V P1003-4
11
12
13
14

NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165

System Control	
Operation Section	
Q6501	F-14
System Control Section	
Q6001	G-11
Q6002	G-10
Q6003	F-9
Q6004	F-9
Q6005	F-8
Q6006	F-8
Q6007	F-7
Q6008	C-3
Q6009	C-3
Q6010	E-4
Q6011	B-7
Q6012	C-8
Q6015	B-10
Q6016	B-12
Q6017	B-11
Q6018	B-12
Q6019	B-11
Q6020	B-12
Q6021	B-11
Q6022	D-11
Q6023	D-12
Q6024	B-8
Q6025	B-8
Q6026	B-8
Q6027	B-9
Q6028	B-8
Q6029	B-9
Q6030	B-9
IC6001	E-6
IC6002	F-3
IC6003	E-8
IC6004	B-6
IC6005	E-11
IC6006	D-12
IC6007	C-9

SYSTEM CONTROL ICs VOLTAGE CHART

REF. NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0.05	0.07	0.12	0.13	0.31	0.22	0.13	0.16	0.10	0.16	4.65	4.54	0.46	0.45	0.45	0.26	0.26	0.26	0.27	0.25
REC	0.06	4.72	0.14	0.14	0.32	4.78	0.14	0.17	4.73	4.67	4.68	4.56	0.47	0.43	0.36	0.08	0.27	0.27	0.28	0.46
PLAY	0.06	4.70	0.14	0.14	0.32	4.77	0.14	0.17	0.10	0.11	0.17	4.55	0.47	0.43	0.44	0.09	0.27	0.27	0.26	0.46
F.F	0.05	0.07	0.12	0.12	0.31	0.22	0.13	0.15	0.09	0.16	4.65	4.08	0.91	0.06	0.96	0.62	0.62	0.62	0.11	1.18
REW	0.05	0.07	0.12	0.12	0.31	0.22	0.13	0.15	0.09	0.16	4.65	4.08	0.91	0.96	0.96	0.63	0.63	0.63	0.11	1.18
REF. NO.	**IC6001**																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0.45	0.16	0.16	0.16	0.16	0.05	4.83	4.88	0.08	2.45	0.13	0.19	0.19	0.19	0.23	0.19	0.19	4.56	4.88	2.47
REC	0.46	0.17	0.16	3.79	0.17	0.06	4.84	4.88	0.09	2.46	0.13	0.19	0.19	0.19	4.35	4.79	0.19	4.56	4.88	2.48
PLAY	0.46	0.17	0.17	3.78	0.17	0.06	4.84	4.88	0.09	2.46	0.13	0.20	0.19	0.20	4.35	0.20	0.20	4.56	4.88	2.48
F.F	1.18	0.15	0.16	4.02	0.15	0.04	4.83	4.87	0.08	2.45	0.12	0.19	4.31	0.18	0.23	0.18	0.19	4.55	4.87	2.47
REW	1.18	0.15	0.15	0.15	4.03	0.05	4.83	4.87	0.08	2.45	0.12	4.75	0.18	0.18	0.22	0.18	0.18	4.54	4.87	2.47
REF. NO.	**IC6002**																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0.16	13.2	0.46	0.06	42.7	0.08	0.04	8.50	0.46	2.99	0.19	9.10	0.16	4.88						
REC	0.17	13.2	0.47	0.09	4.32	0.10	0.06	8.48	0.47	2.98	0.19	0.16	4.67	4.88						
PLAY	0.17	13.2	0.47	0.09	4.29	0.10	0.06	8.50	0.47	3.01	0.20	9.10	0.17	4.88						
F.F	0.15	13.2	0.90	0.07	3.40	0.08	0.04	7.57	0.90	2.98	0.18	9.10	0.15	4.87						
REW	0.15	13.2	0.91	0.07	3.42	0.08	0.04	7.56	0.91	2.97	0.18	9.10	0.15	4.87						
REF. NO.	**IC6003**																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0.19	7.77	0.19	7.77	0.19	7.76	0.05	9.10	0.19	8.82	0.23	0.11	4.64	4.88						
REC	0.20	7.76	0.19	0.95	0.19	0.91	0.06	0.24	4.79	0.21	4.35	0.13	4.68	4.88						
PLAY	0.20	7.77	0.20	7.77	0.20	7.76	0.06	9.10	0.20	0.20	4.35	5.17	0.17	4.88						
F.F	0.18	7.78	4.31	0.18	0.18	0.97	0.05	9.10	0.18	8.92	0.23	0.10	4.64	4.88						
REW	0.18	7.77	0.18	0.85	4.75	0.18	0.04	9.10	0.18	8.93	0.22	0.11	4.65	4.87						
REF. NO.	**IC6004**																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0.08	0.18	4.87	0.40	0.04	2.37	0.09	2.94	2.79	2.95	2.79	0.04	0.05	0.05						
REC	0.10	0.19	4.88	0.42	0.05	2.38	0.10	2.95	2.80	2.95	2.80	0.06	0.06	0.07						
PLAY	0.10	0.20	4.88	0.42	0.05	2.37	0.10	2.95	2.79	2.95	2.80	0.06	0.06	0.06						
F.F	0.08	0.18	4.87	0.40	0.04	2.36	0.08	2.94	2.79	2.94	2.79	0.04	0.05	0.05						
REW	0.08	0.18	4.87	0.40	0.04	2.36	0.08	2.94	2.79	2.94	2.79	0.04	0.05	0.05						
REF. NO.	**IC6005**																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0.81	4.88	4.81	0.04	0.08	4.88	0.04	2.47	2.50	2.50	2.32	4.87	0.05	4.88						
REC	0.83	4.88	4.81	0.06	0.07	4.88	0.06	2.48	2.51	2.51	2.33	4.88	0.07	4.88						
PLAY	0.82	4.87	4.81	0.06	0.07	4.88	0.06	2.48	2.51	2.51	2.33	4.88	0.07	4.88						
F.F	0.80	4.87	4.77	0.04	0.05	4.88	0.04	2.47	2.51	2.51	2.42	4.88	0.05	4.88						
REW	0.08	4.87	4.76	0.04	0.08	4.87	0.04	2.47	2.50	2.50	2.32	4.87	0.05	4.87						
REF. NO.	**IC6006**										**IC6007**									
MODE	1	2	3	4	5	6	7	8			1	2	3	4	5	6				
STOP	9.01	9.11	9.07	0.04	0.71	0.01	14.3	15.4			2.45	4.87	0	4.87	0	0				
REC	4.62	4.17	4.15	0.06	0.73	0.02	13.0	14.2			2.45	4.87	0	4.87	0	0				
PLAY	4.61	4.17	4.15	0.06	0.73	0.02	13.0	14.2			2.45	4.87	0	4.87	0	0				
F.F	10.8	10.1	9.84	0.04	0.71	0.19	13.0	14.2			2.45	4.87	0	4.87	0	0				
REW	11.2	10.5	10.3	0.04	0.71	0.23	12.7	13.9			2.45	4.87	0	4.87	0	0				

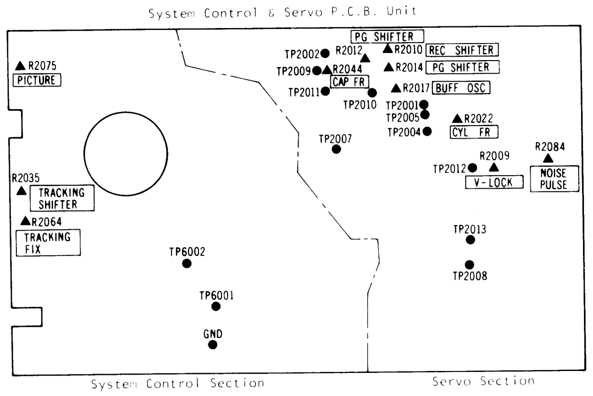
THE MEASUREMENT MODE OF THE D.C. VOLTAGE ON THESE CHARTS ARE IN PAL MODE.

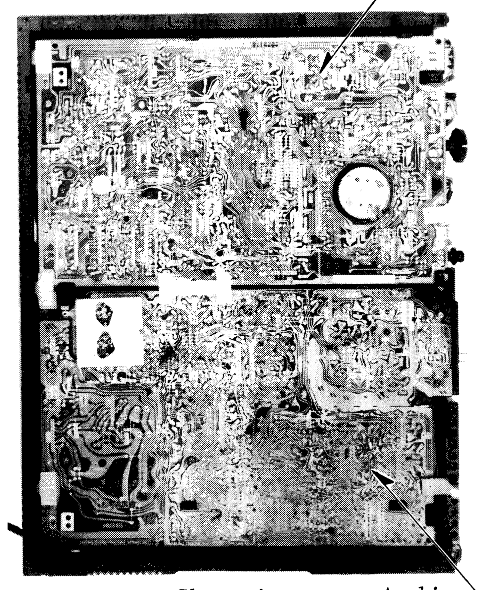
Servo & System Control C.B.A.			
Servo Section		System Control Section	
Q2001	B-7	Q6001	B-5
Q2002	D-8	Q6003	C-6
Q2003	D-8	Q6004	B-6
Q2004	C-8	Q6005	C-6
Q2005	C-8	Q6006	C-6
Q2006	C-9	Q6007	C-6
Q2007	C-9	Q6008	B-5
Q2008	C-9	Q6009	B-5
Q2009	B-7	Q6010	D-5
Q2010	D-7	Q6011	C-8
Q2011	D-8	Q6012	E-3
Q2012	D-7	Q6015	A-2
Q2013	C-6	Q6016	B-3
Q2014	D-6	Q6017	B-3
Q2015	C-7	Q6018	A-3
		Q6019	A-3
IC2001	E-7	Q6020	A-4
IC2002	E-8	Q6021	B-4
IC2003	D-6	Q6022	B-3
IC2004	D-8	Q6023	C-9
IC2005	D-8	Q6024	C-9
IC2006	C-7	Q6025	B-8
IC2007	D-7	Q6026	B-8
		Q6027	B-8
		Q6028	B-8
		Q6029	B-8
		Q6030	B-8
		Q6032	B-5
		IC6001	D-4
		IC6002	D-5
		IC6003	E-2
		IC6004	C-3
		ID6005	C-2
		IC6006	A-3
		IC6007	E-3

SYSTEM CONTROL TRANSISTORs VOLTAGE CHART

REF. NO.	Q6001			Q6003			Q6004			Q6005			Q6006			Q6007		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0.03	0.23	0.28	9.11	9.11	8.37	0.04	0.10	0.73	9.11	9.11	8.38	9.11	0	9.11	9.11	0.42	9.10
REC	0.05	0.07	0.65	9.11	−0.07	9.09	0.06	9.09	0.44	9.10	9.00	8.31	9.00	8.99	8.20	8.99	8.98	8.26
PLAY	0.06	0.07	0.65	9.10	9.10	8.35	0.05	0.11	0.75	9.10	9.10	8.36	9.10	0	9.10	9.10	0.42	9.10
F.F	0.33	0.22	0.29	9.11	9.10	8.36	0.03	0.10	0.74	9.11	9.10	8.36	9.10	0	9.10	9.10	0.42	9.10
REW	0.03	0.22	0.28	9.10	9.10	8.35	0.03	0.10	0.74	9.11	9.10	8.37	9.10	0	9.10	9.10	0.42	9.10
REF. NO.	**Q6008**			**Q6009**			**Q6010**			**Q6012**			**Q6015**			**Q6016**		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0.25	15.3	0.55	9.12	0.55	9.06	4.88	0.28	4.82	0.04	4.83	0.04	0	8.80	0.08	9.11	0.34	9.11
REC	0.52	13.6	0.51	9.09	0.51	9.04	4.88	0.21	4.82	0.06	4.84	0.06	0.06	4.27	0.09	4.17	0.34	4.14
PLAY	0.51	14.1	0.33	9.10	0.33	9.05	4.88	0.21	4.82	0.06	4.83	0.06	0.05	4.27	0.10	4.17	0.30	4.14
F.F	1.35	14.5	1.47	9.11	1.48	8.99	4.88	0.78	4.75	0.04	8.90	0.07	0.04	8.89	0.08	10.2	10.2	9.44
REW	1.36	14.5	1.43	9.11	1.55	8.99	4.88	0.78	4.74	0.04	4.84	0.04	0.04	8.89	0	10.3	0.26	10.3
REF. NO.	**Q6001**			**Q6003**			**Q6004**			**Q6005**			**Q6006**			**Q6007**		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	9.11	0.33	9.11	0	0.34	0	0	0.18	0	0	9.11	0.11	0	9.11	0.11	9.11	9.08	8.87
REC	4.17	0.30	4.17	0	0.36	0	0	0.34	0.03	0	4.17	0.11	0.03	4.13	0.58	4.17	4.15	4.05
PLAY	4.17	0.30	4.17	0	0.34	0	0	0.35	0.03	0	4.17	0.11	0.03	4.13	0.58	4.17	4.15	4.05
F.F	10.0	0.25	10.1	0.19	10.0	0.20	0.19	0.24	0.98	0.19	10.1	0.16	0.98	1.08	1.70	10.1	10.1	9.40
REW	10.3	10.2	9.49	0.22	0.27	1.04	0.23	10.4	0.24	1.06	2.06	1.82	0.35	10.8	0.20	11.3	0	10.3

THE MEASUREMENT MODE OF THE D.C. VOLTAGE ON THESE CHARTS IN PAL COLOUR MODE.


System Control & Servo P.C.B. Unit
PG SHIFTER
TP2002
R2012
R2010
REC SHIFTER
R2075
PICTURE
TP2009
R2044
CAP FR
R2014
PG SHIFTER
TP2011
R2017
BUFF OSC
TP2010
TP2001
TP2005
TP2004
R2022
CYL FR
TP2007
R2084
R2009
TP2012
V-LOCK
NOISE PULSE
R2035
TRACKING SHIFTER
R2064
TRACKING FIX
TP2013
TP2008
TP6002
TP6001
GND
System Control Section
Servo Section


Servo & System Control P.C.B. Unit
Luminance, Chrominance, Audio & Power Supply P.C.B. Unit

SERVO & SYSTEM CONTROL BOARD (VEP02167A)

JPC

1	PICTURE VR ⊖
2	CENTER
3	PICTURE VR ⊕
4	PAUSE REMOCON
5	EE / VV

JPB

1	AUDIO MUTE
2	REC +9 V
3	DELAYED REC 9 V
4	EXCEPT REC Ⓛ
5	DOC IN

JPA

1	V - PULSE
2	SEARCH Ⓛ
3	HEAD SW
4	REF 50 Hz
5	VSS

BP6013

1	GND
2	REC REQUEST
3	POWER OFF Ⓛ
4	TIMER SET
5	CLOCK 60 Hz
6	TIMER ON

BP6007

1	REG +9V
2	KEY COM.
3	GND
4	PAUSE
5	MEMORY COUNT

BP4506

1	CH 1
2	CH 2
3	ST
4	MONO

BP6008

1	KEY Ⅲ
2	KEY Ⅱ
3	REW
4	FF
5	DEW
6	PLAY
7	KEY Ⅰ
8	REC

BP6014

1	CH 1
2	CH 2
3	ST
4	MONO

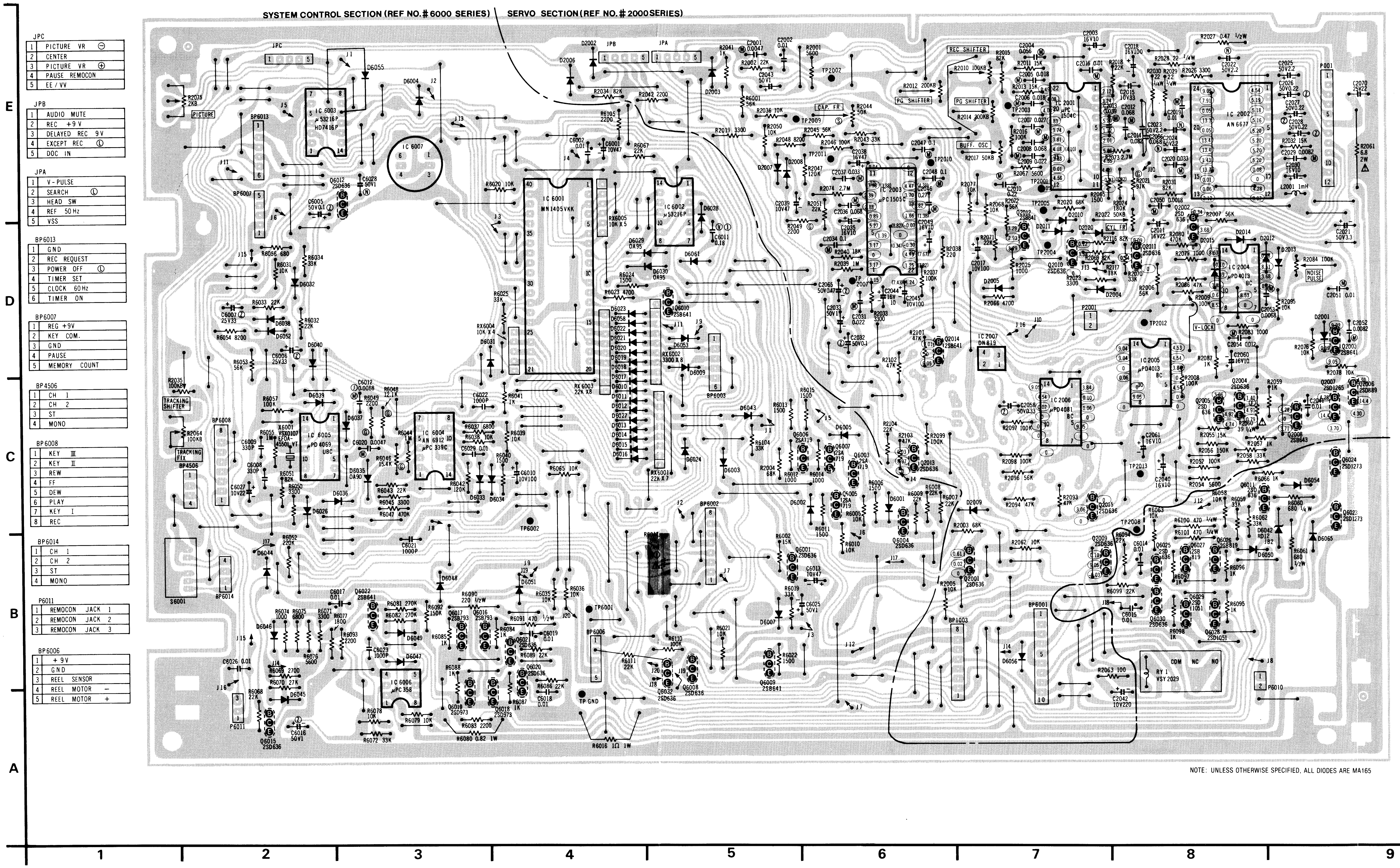
P6011

1	REMOCON JACK 1
2	REMOCON JACK 2
3	REMOCON JACK 3

BP6006

1	+ 9 V
2	GND
3	REEL SENSOR
4	REEL MOTOR −
5	REEL MOTOR +

SYSTEM CONTROL SECTION (REF NO. # 6000 SERIES) SERVO SECTION (REF NO. # 2000 SERIES)


E
D
C
B
A
1
2
3
4
5
6
7
8
9
JPC
JPB
JPA
PICTURE
TRACKING SHIFTER
TRACKING FIX
REC SHIFTER
PG SHIFTER
CAP. FR
BUFF. OSC
CYL FR
V-LOCK
NOISE PULSE
IC 6001 MN1405VKK
IC 6002 μ53216P
IC 6003 μ53216P HD7416P
IC 6004 AN 6912 μPC 339C
IC 6005 μPD 4069 UBC
IC 6006 μPC 358
IC 6007
IC 2001 μPC 1504C
IC 2002 AN 6677
IC 2003 μPC 1505C
IC 2004 μPD 4013 BC
IC 2005 μPD4013 BC
IC 2006 μPD4081 BC
IC 2007 DN 819
X6001 VSX0107 EFOA 4550 VT
RX6001 22K X 7
RX6002 3300 X 8
RX6003 22K X8
RX6004 10K X 4
RX6005 10K X 5
RY 1 VSY 2029
COM NC NO
L2001 1mH
R6016 1Ω 1W
R6080 0.82 1W
R2061 6.8 2W
S6001
BP6001
BP6002
BP6003
BP6006
BP6007
BP6008
BP6013
BP6014
BP4506
BP1003
P001
P2001
P6010
P6011
TP2001
TP2002
TP2003
TP2004
TP2005
TP2007
TP2008
TP2009
TP2010
TP2011
TP2012
TP2013
TP6001
TP6002
TP GND

NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165

P 001

1	PG
2	—
3	MA
4	MA
5	MA
6	M -
7	P
8	P
9	P
10	P -
11	GN
12	OS

P2001

1	CO
2	GN

BP 6001

1	DE
2	
3	TA
4	GN
5	CA
6	FG
7	CA
8	CA
9	LO
10	LO

BP 1003

1	+
2	MO
3	—
4	PO
5	MO
6	GN
7	+
8	+

BP 600

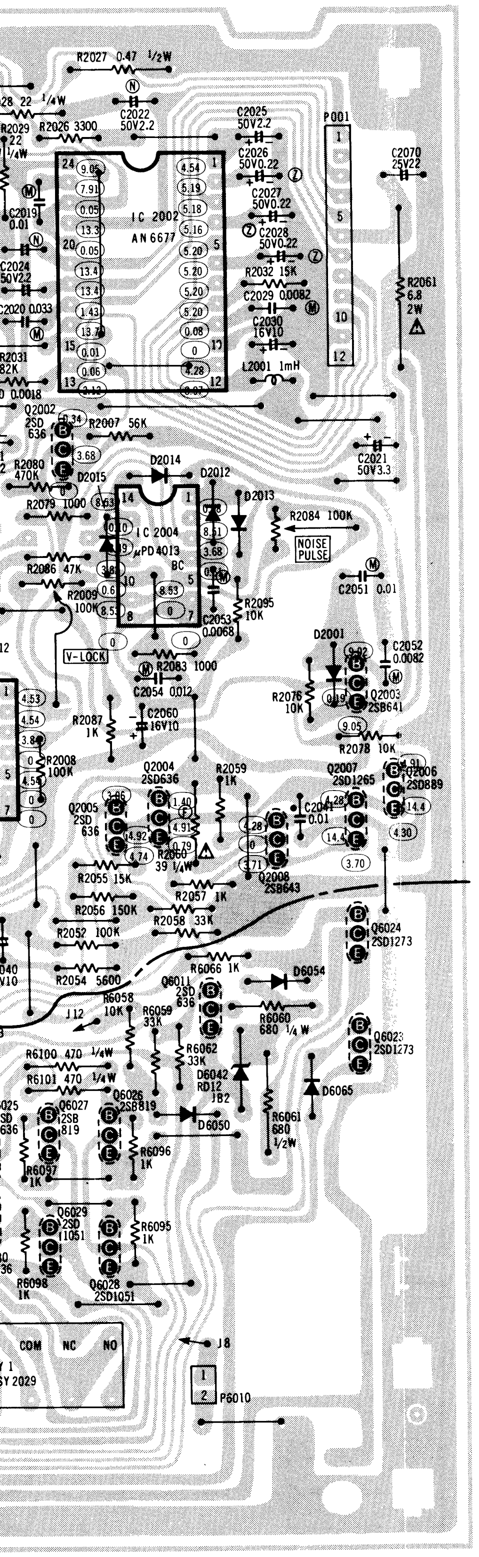
1	PL
2	RE
3	PA
4	FF
5	ST
6	EJ

BP 600

1	SE
2	SE
3	
4	
5	RE
6	RE
7	CA
8	CA

P6010

1	SU
2	G



IC 2002
AN 6677
IC 2004
μPD 4013
V-LOCK
NOISE PULSE
L2001 1mH
P001
8
9

NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165

P 001

1	PG
2	—
3	MAIN 3
4	MAIN 2
5	MAIN 1
6	M - COM
7	P 3
8	P 2
9	P 1
10	P - COM
11	GND
12	OSC

P 2001

1	CONTROL HEAD
2	GND

BP 6001

1	DEW SENSOR
2	—
3	TAKE UP PHOTO TR
4	GND
5	CAPSTAN FG
6	FG GND
7	CAPSTAN Ⓜ +
8	CAPSTAN Ⓜ −
9	LOADING Ⓜ −
10	LOADING Ⓜ +

BP 1003

1	+ 18 V (CAP)
2	MOTOR + 15 V
3	—
4	POWER OFF Ⓛ
5	MOTOR GND
6	GND
7	+ 9 V
8	+ 5 V

BP 6003

1	PLAY Ⓟ
2	REW Ⓟ
3	PAUSE Ⓟ
4	FF / REW Ⓟ
5	STOP Ⓟ
6	EJECT Ⓟ

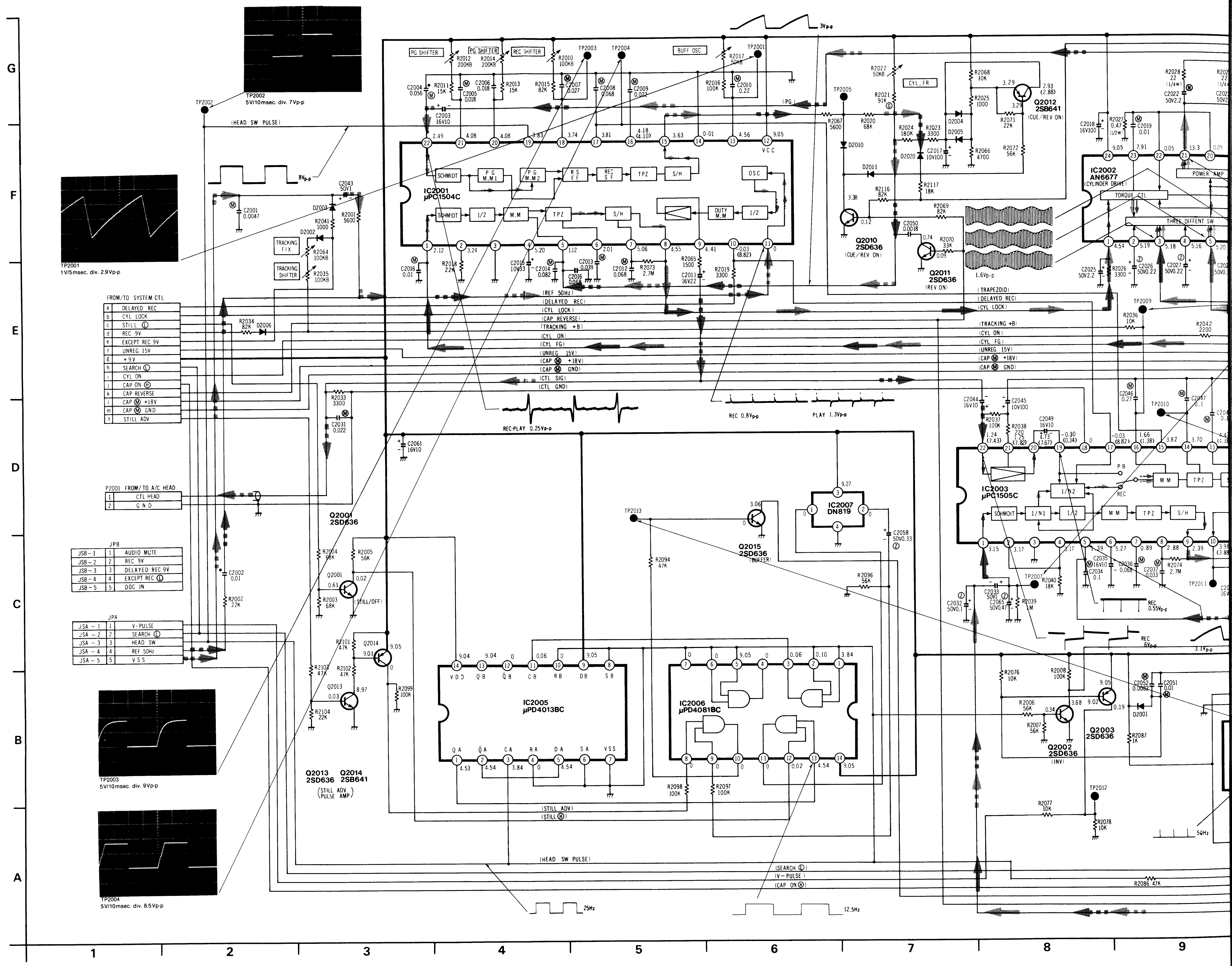
BP 6002

1	SENSOR LED GND
2	SENSOR LED
3	—
4	—
5	REC TAB SW
6	REC TAB SW
7	CASSETTE DOWN
8	CASSETTE DOWN

P 6010

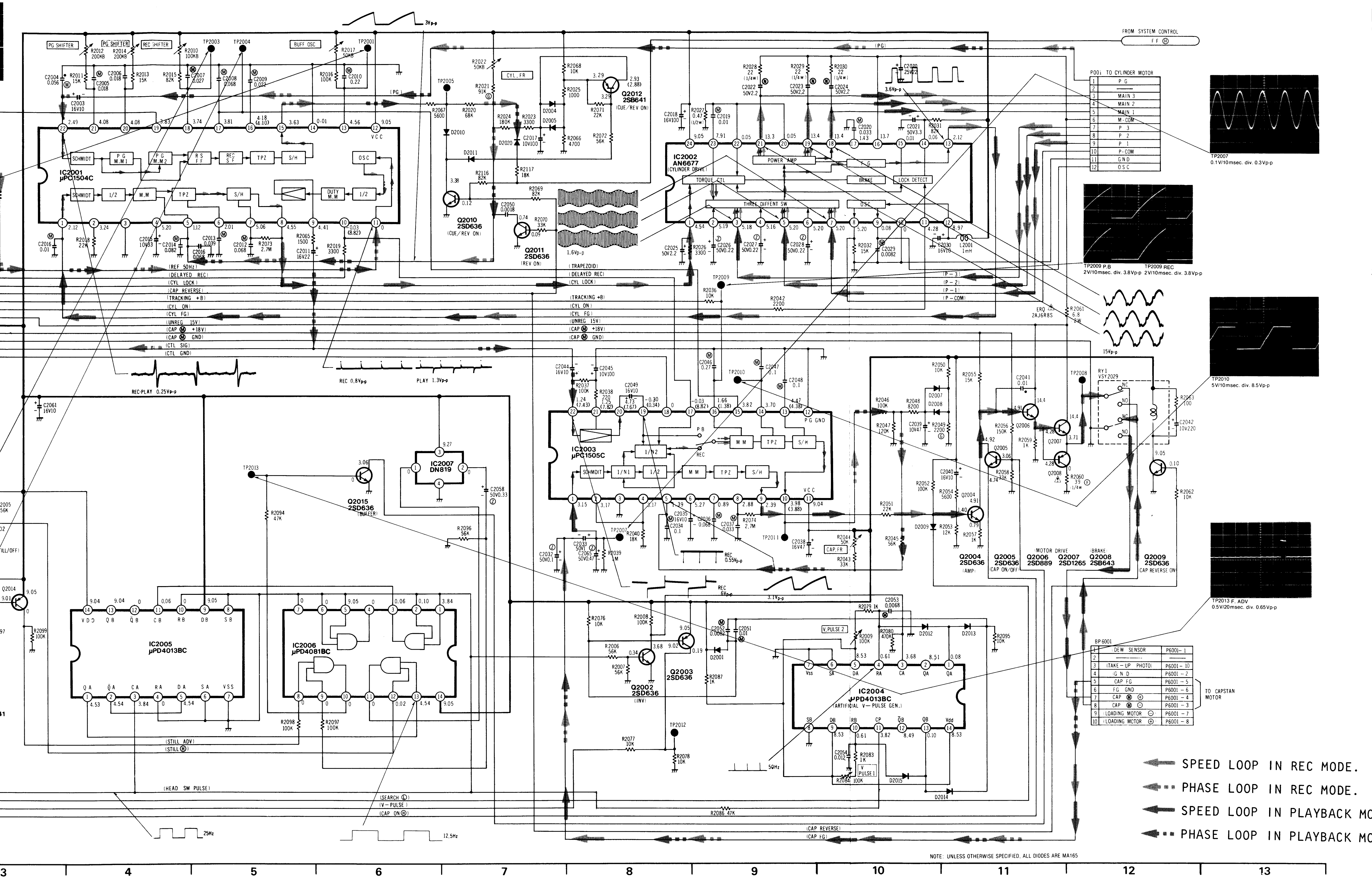
1	SUPPLY PHOTO TR
2	GND

SERVO SCHEMATIC DIAGRAM



TP2002
5V/10msec. div. 7Vp-p
TP2001
1V/5msec. div. 2.9Vp-p
TP2003
5V/10msec. div. 9Vp-p
TP2004
5V/10msec. div. 8.5Vp-p
IC2001
μPC1504C
IC2002
AN6677
(CYLINDER DRIVE)
IC2003
μPC1505C
IC2005
μPD4013BC
IC2006
μPD4081BC
IC2007
DN819
Q2001
2SD636
Q2010
2SD636
(CUE/REV ON)
Q2011
2SD636
(REV ON)
Q2012
2SB641
(CUE/REV ON)
Q2013 2SD636
Q2014 2SB641
(STILL ADV PULSE AMP)
Q2015
2SD636
(BUFFER)
Q2002
2SD636
(INV)
Q2003
2SD636
PG SHIFTER
REC SHIFTER
BUFF OSC
CYL. FR
TRACKING FIX
TRACKING SHIFTER
SCHMIDT
PG M.M 1
PG M.M 2
RS FF
REC SF
TPZ
S/H
OSC
1/2
M.M
DUTY M.M
POWER AMP
TORQUE CTL
THREE DIFFENT SW
1/N1
1/N2
PB
REC
(HEAD SW PULSE)
(PG)
FROM/TO SYSTEM CTL
a DELAYED REC
b CYL LOCK
c STILL Ⓛ
d REC 9V
e EXCEPT REC 9V
f UNREG 15V
g +9V
h SEARCH Ⓛ
i CYL ON
j CAP ON Ⓗ
k CAP REVERSE
l CAP Ⓜ +18V
m CAP Ⓜ GND
n STILL ADV
P2001 FROM/TO A/C HEAD
1 CTL HEAD
2 GND
JPB
JSB-1 1 AUDIO MUTE
JSB-2 2 REC 9V
JSB-3 3 DELAYED REC 9V
JSB-4 4 EXCEPT REC Ⓛ
JSB-5 5 DOC IN
JPA
JSA-1 1 V-PULSE
JSA-2 2 SEARCH Ⓛ
JSA-3 3 HEAD SW
JSA-4 4 REF 50Hz
JSA-5 5 VSS
(REF 50Hz)
(DELAYED REC)
(CYL LOCK)
(CAP REVERSE)
(TRACKING +B)
(CYL ON)
(CYL FG)
(UNREG 15V)
(CAP Ⓜ +18V)
(CAP Ⓜ GND)
(CTL SIG)
(CTL GND)
(TRAPEZOID)
REC-PLAY 0.25Vp-p
REC 0.8Vp-p
PLAY 1.3Vp-p
3Vp-p
8Vp-p
1.6Vp-p
REC 0.55Vp-p
REC 6Vp-p
3.1Vp-p
(STILL ADV)
(STILL Ⓗ)
(HEAD SW PULSE)
(SEARCH Ⓛ)
(V-PULSE)
(CAP ON Ⓗ)
25Hz
12.5Hz
50Hz
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9

AM


IC2001 μPC1504C
IC2002 AN6677 (CYLINDER DRIVE)
IC2003 μPC1505C
IC2004 μPD4013BC (ARTIFICIAL V-PULSE GEN.)
IC2005 μPD4013BC
IC2006 μPD4081BC
IC2007 DN819
Q2010 2SD636 (CUE/REV ON)
Q2011 2SD636 (REV ON)
Q2012 2SB641 (CUE/REV ON)
Q2015 2SD636 (BUFFER)
Q2002 2SD636 (INV)
Q2003 2SD636
Q2004 2SD636 (AMP)
Q2005 2SD636 (CAP ON/OFF)
MOTOR DRIVE Q2006 2SD889 Q2007 2SD1265
BRAKE Q2008 2SB643
Q2009 2SD636 (CAP REVERSE ON)
Q2014
PG SHIFTER
REC SHIFTER
BUFF OSC
CYL FR
CAP FR
V PULSE 2
V PULSE 1
SCHMIDT
P G M.M 1
P G M.M 2
R S F F
REC S F
TPZ
S/H
OSC
1/2
M.M
DUTY M.M
POWER AMP
F G
TORQUE CTL
BRAKE
LOCK DETECT
THREE DIFFENT SW
1/N2
1/N1
PB
REC
FROM SYSTEM CONTROL F F Ⓜ
P001 TO CYLINDER MOTOR
1 P G
2 —
3 MAIN 3
4 MAIN 2
5 MAIN 1
6 M-COM
7 P 3
8 P 2
9 P 1
10 P-COM
11 GND
12 OSC
RY1 VSY2029
BP6001
1 DEW SENSOR P6001-1
2 —
3 (TAKE-UP PHOTO) P6001-10
4 (GND) P6001-2
5 CAP FG P6001-5
6 FG GND P6001-6
7 CAP Ⓜ ⊕ P6001-4
8 CAP Ⓜ ⊖ P6001-3
9 (LOADING MOTOR ⊖) P6001-7
10 (LOADING MOTOR ⊕) P6001-8
TO CAPSTAN MOTOR
(REF 50Hz)
(DELAYED REC)
(CYL LOCK)
(CAP REVERSE)
(TRACKING +B)
(CYL ON)
(CYL FG)
(UNREG 15V)
(CAP Ⓜ +18V)
(CAP Ⓜ GND)
(CTL SIG)
(CTL GND)
(TRAPEZOID)
(PG)
(P-3)
(P-2)
(P-1)
(P-COM)
(STILL ADV)
(STILL Ⓗ)
(HEAD SW PULSE)
(SEARCH Ⓛ)
(V-PULSE)
(CAP ON Ⓡ)
(CAP REVERSE)
(CAP FG)
3Vp-p
3.6Vp-p
1.6Vp-p
15Vp-p
REC·PLAY 0.25Vp-p
REC 0.8Vp-p
PLAY 1.3Vp-p
REC 0.55Vp-p
REC 6Vp-p
3.1Vp-p
25Hz
12.5Hz
50Hz
TP2007 0.1V/10msec. div. 0.3Vp-p
TP2009 P.B 2V/10msec. div. 3.8Vp-p
TP2009 REC 2V/10msec. div. 3.8Vp-p
TP2010 5V/10msec. div. 8.5Vp-p
TP2013 F. ADV 0.5V/20msec. div. 0.65Vp-p
TP2001
TP2003
TP2004
TP2005
TP2008
TP2011
TP2012
3 4 5 6 7 8 9 10 11 12 13

SPEED LOOP IN REC MODE.

PHASE LOOP IN REC MODE.

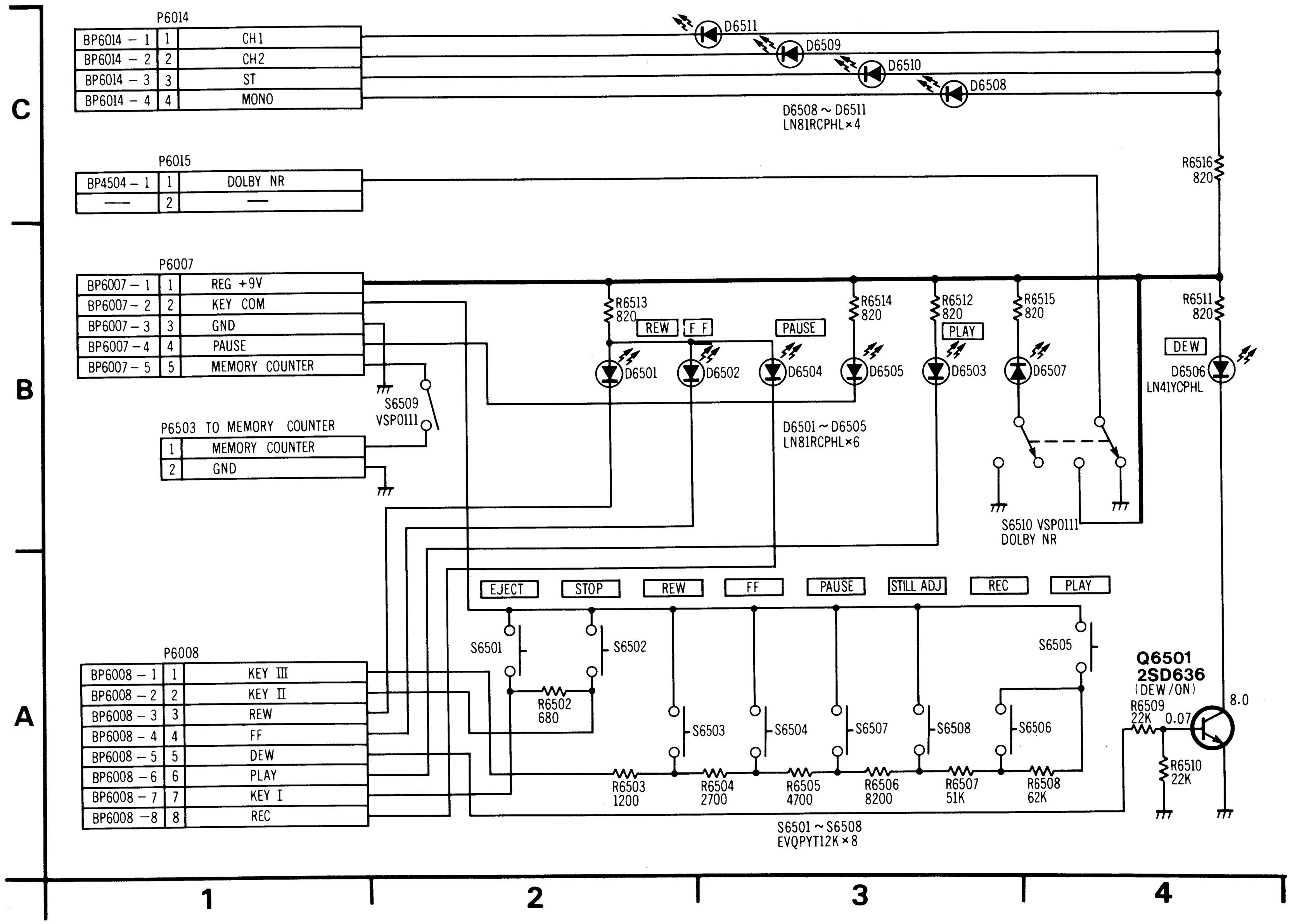
SPEED LOOP IN PLAYBACK MODE.

PHASE LOOP IN PLAYBACK MODE.

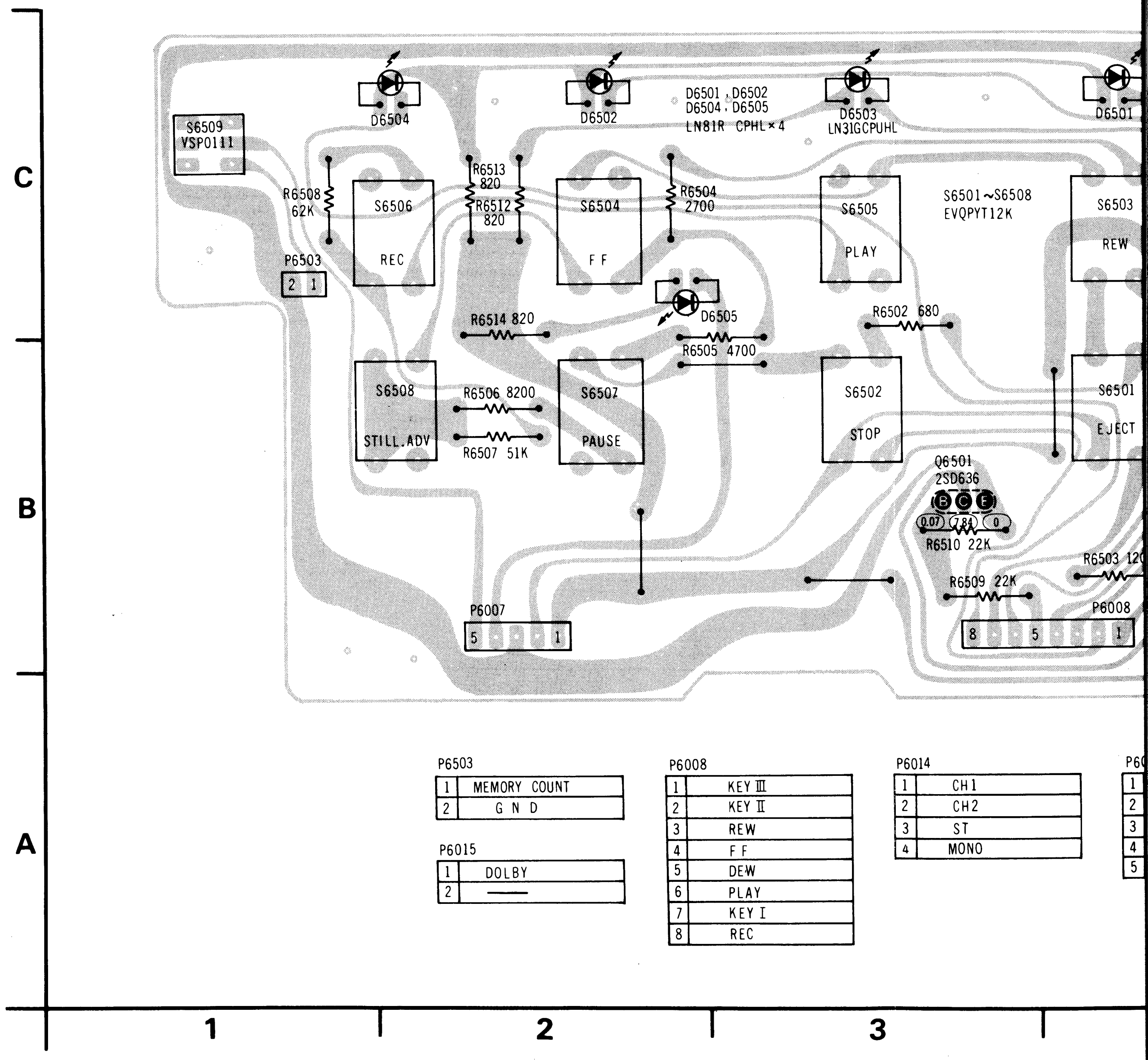
NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165

Servo	
Q2001	C-3
Q2002	B-8
Q2003	B-8
Q2004	C-11
Q2005	D-11
Q2006	D-11
Q2007	D-11
Q2008	D-11
Q2009	D-12
Q2010	F-7
Q2011	E-7
Q2012	G-8
Q2013	B-3
Q2014	C-3
Q2015	D-6
Q2016	D-4
IC2001	F-5
IC2002	F-9
IC2003	D-8
IC2004	B-10
IC2005	B-4
IC2006	B-6
IC2007	D-7

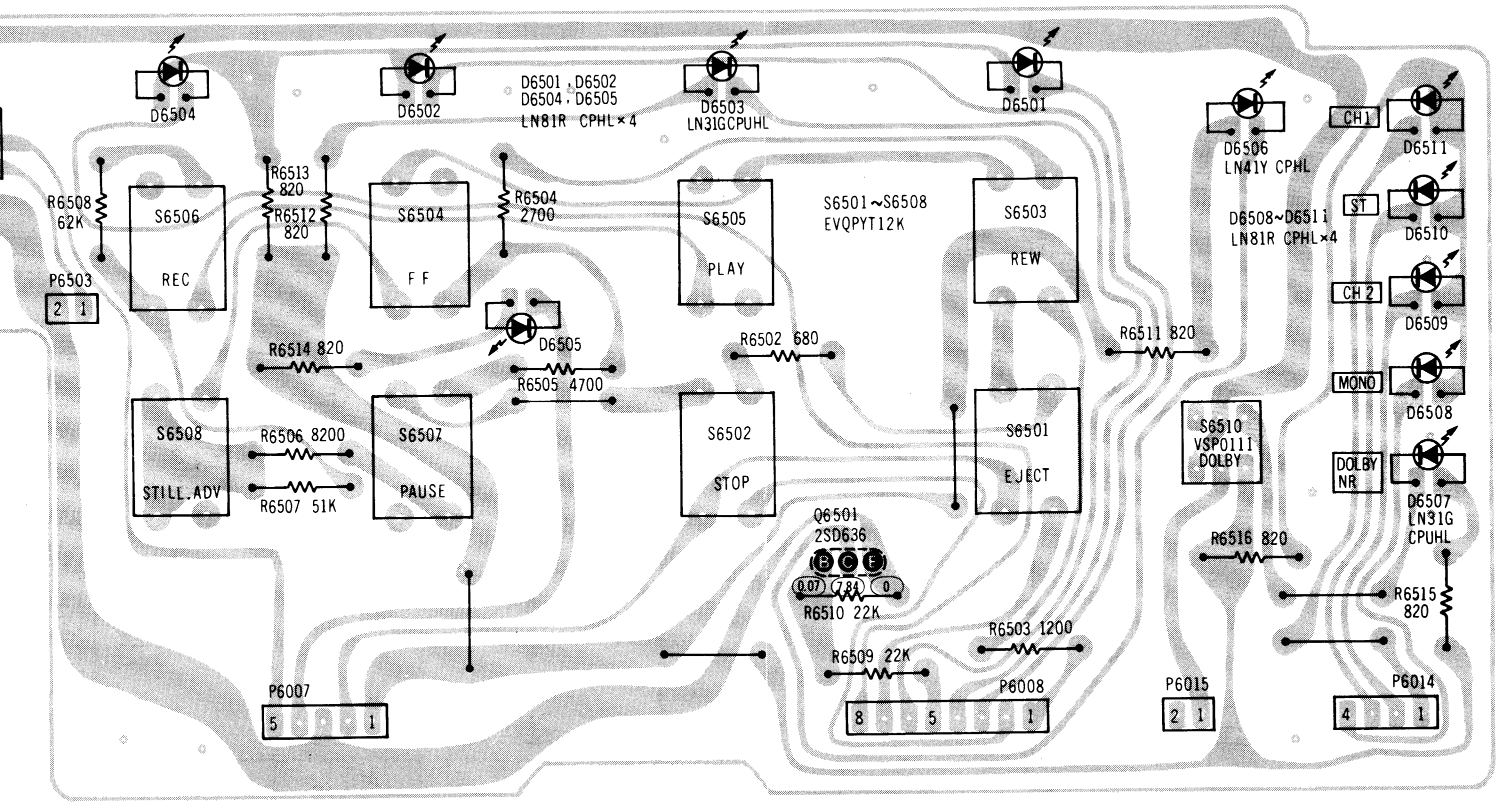
OPERATION SCHEMATIC DIAGRAM


P6014
BP6014 – 1 | 1 | CH1
BP6014 – 2 | 2 | CH2
BP6014 – 3 | 3 | ST
BP6014 – 4 | 4 | MONO
D6511
D6509
D6510
D6508
D6508 ~ D6511
LN81RCPHL×4
P6015
BP4504 – 1 | 1 | DOLBY NR
— | 2 | —
R6516
820
P6007
BP6007 – 1 | 1 | REG +9V
BP6007 – 2 | 2 | KEY COM
BP6007 – 3 | 3 | GND
BP6007 – 4 | 4 | PAUSE
BP6007 – 5 | 5 | MEMORY COUNTER
S6509
VSP0111
P6503 TO MEMORY COUNTER
1 | MEMORY COUNTER
2 | GND
R6513
820
REW
F F
PAUSE
R6514
820
R6512
820
PLAY
R6515
820
R6511
820
DEW
D6501
D6502
D6504
D6505
D6503
D6507
D6506
LN41YCPHL
D6501 ~ D6505
LN81RCPHL×6
S6510 VSP0111
DOLBY NR
EJECT
STOP
REW
FF
PAUSE
STILL ADJ
REC
PLAY
S6501
S6502
S6505
R6502
680
S6503
S6504
S6507
S6508
S6506
R6503
1200
R6504
2700
R6505
4700
R6506
8200
R6507
51K
R6508
62K
S6501 ~ S6508
EVQPYT12K×8
Q6501
2SD636
(DEW/ON)
R6509
22K
0.07
8.0
R6510
22K
P6008
BP6008 – 1 | 1 | KEY Ⅲ
BP6008 – 2 | 2 | KEY Ⅱ
BP6008 – 3 | 3 | REW
BP6008 – 4 | 4 | FF
BP6008 – 5 | 5 | DEW
BP6008 – 6 | 6 | PLAY
BP6008 – 7 | 7 | KEY Ⅰ
BP6008 – 8 | 8 | REC
A
B
C
1
2
3
4

OPERATION BOARD (VEP06192B)


S6509
VSP0111
D6504
D6502
D6501 , D6502
D6504 , D6505
LN81R CPHL×4
D6503
LN31GCPUHL
D6501
R6508
62K
S6506
REC
R6513
820
R6512
820
S6504
F F
R6504
2700
S6505
PLAY
S6501~S6508
EVQPYT12K
S6503
REW
P6503
2 1
R6514 820
D6505
R6505 4700
R6502 680
S6508
STILL.ADV
R6506 8200
R6507 51K
S6507
PAUSE
S6502
STOP
S6501
EJECT
Q6501
2SD636
B C E
0.07
7.84
0
R6510 22K
R6509 22K
R6503 12
P6007
5
1
P6008
8
5
1
P6503
1 | MEMORY COUNT
2 | G N D
P6015
1 | DOLBY
2 | ——
P6008
1 | KEY Ⅲ
2 | KEY Ⅱ
3 | REW
4 | F F
5 | DEW
6 | PLAY
7 | KEY Ⅰ
8 | REC
P6014
1 | CH1
2 | CH2
3 | ST
4 | MONO
P6
1
2
3
4
5
A
B
C
1
2
3

N BOARD (VEP06192B)



D6504
D6502
D6501, D6502
D6504, D6505
LN81R CPHL×4
D6503
LN31GCPUHL
D6501
D6506
LN41Y CPHL
D6508~D6511
LN81R CPHL×4
CH1
D6511
ST
D6510
CH2
D6509
MONO
D6508
DOLBY NR
D6507
LN31G CPUHL
R6508 62K
R6513 820
R6512 820
R6504 2700
S6506 REC
S6504 F F
S6505 PLAY
S6501~S6508
EVQPYT12K
S6503 REW
P6503
R6514 820
D6505
R6505 4700
R6502 680
R6511 820
S6508 STILL.ADV
R6506 8200
R6507 51K
S6507 PAUSE
S6502 STOP
S6501 EJECT
S6510
VSP0111
DOLBY
Q6501
2SD636
B C E
0.07
7.84
0
R6510 22K
R6516 820
R6515 820
R6503 1200
R6509 22K
P6007
P6008
P6015
P6014

P6503

1	MEMORY COUNT
2	G N D

P6015

1	DOLBY
2	———

P6008

1	KEY Ⅲ
2	KEY Ⅱ
3	REW
4	F F
5	DEW
6	PLAY
7	KEY Ⅰ
8	REC

P6014

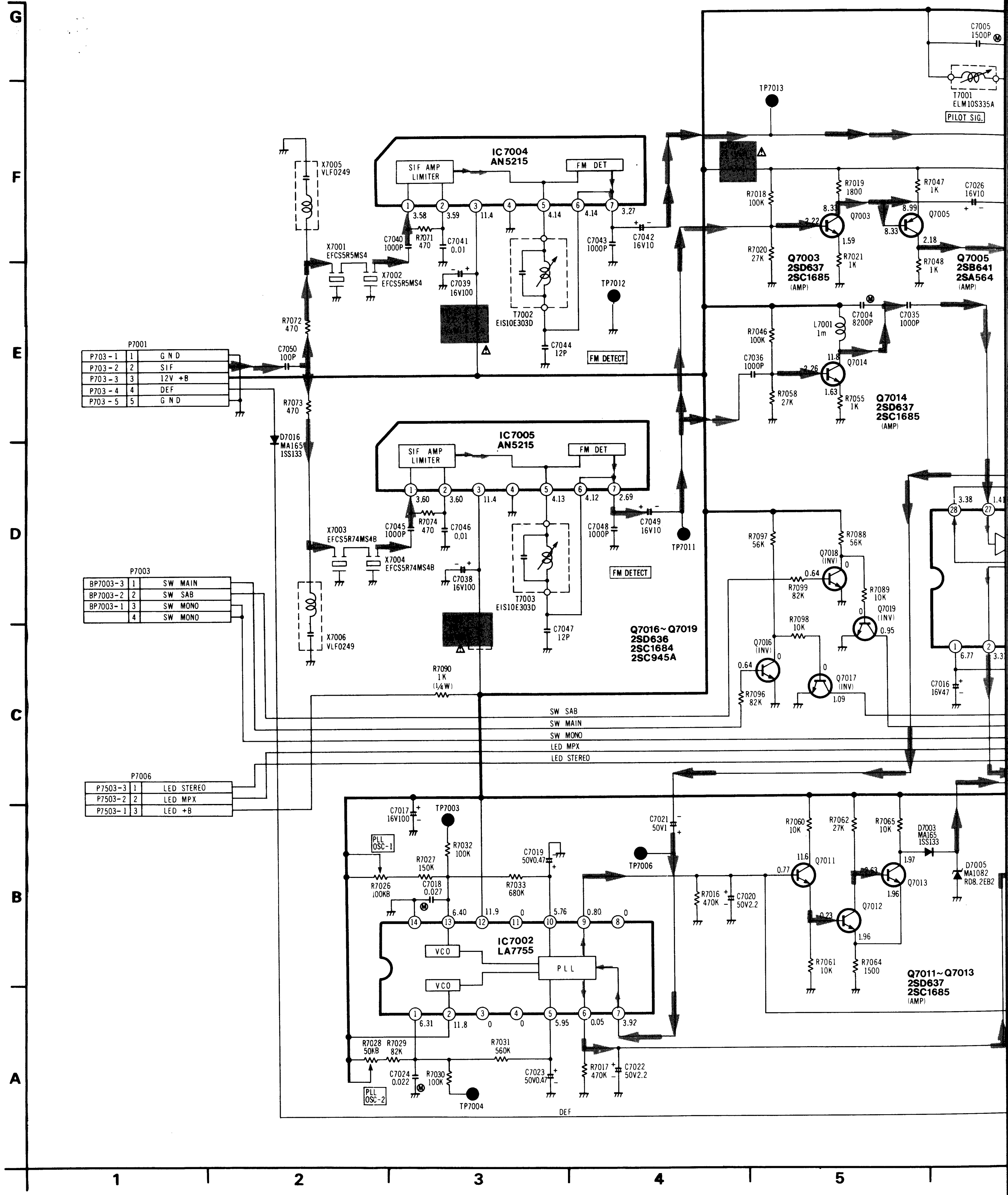
1	CH1
2	CH2
3	ST
4	MONO

P6007

1	REG +9V
2	KEY COM
3	G N D
4	PAUSE
5	MEMORY COUNT

2
3
4
5

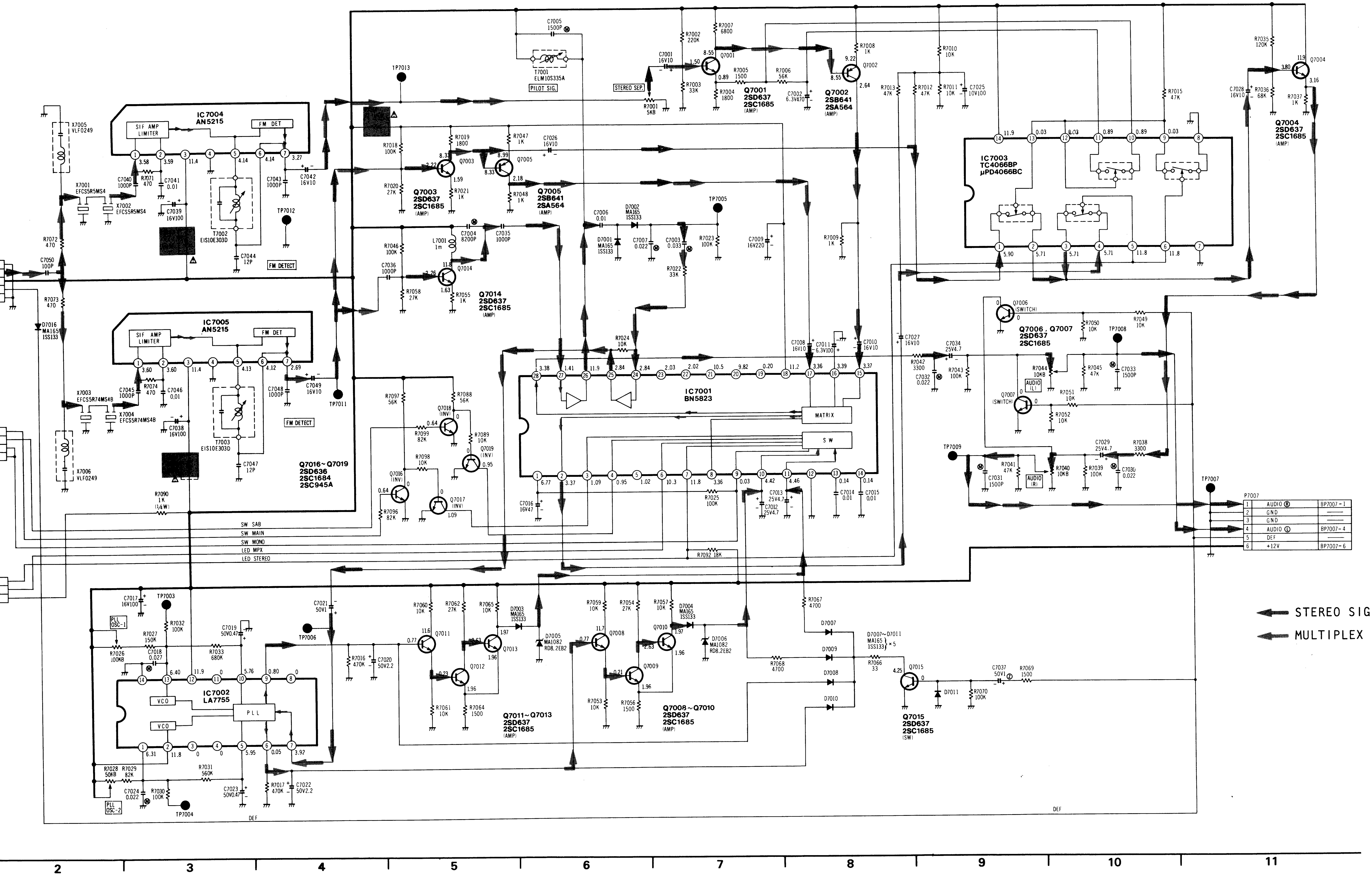
DECODER SCHEMATIC DIAGRAM



G
F
E
D
C
B
A
1
2
3
4
5
C7005 1500P
T7001 ELM10S335A
PILOT SIG.
TP7013
IC7004 AN5215
SIF AMP LIMITER
FM DET
X7005 VLF0249
X7001 EFCS5R5MS4
X7002 EFCS5R5MS4
C7040 1000P
R7071 470
C7041 0.01
C7039 16V100
T7002 EIS10E303D
C7043 1000P
C7042 16V10
C7044 12P
FM DETECT
TP7012
R7072 470
C7050 100P
P7001
P703-1 1 G N D
P703-2 2 SIF
P703-3 3 12V +B
P703-4 4 DEF
P703-5 5 G N D
R7073 470
D7016 MA165 1SS133
IC7005 AN5215
X7003 EFCS5R74MS4B
X7004 EFCS5R74MS4B
C7045 1000P
R7074 470
C7046 0.01
C7038 16V100
T7003 EIS10E303D
C7048 1000P
C7049 16V10
C7047 12P
TP7011
X7006 VLF0249
P7003
BP7003-3 1 SW MAIN
BP7003-2 2 SW SAB
BP7003-1 3 SW MONO
4 SW MONO
R7090 1K (1/4W)
SW SAB
SW MAIN
SW MONO
LED MPX
LED STEREO
P7006
P7503-3 1 LED STEREO
P7503-2 2 LED MPX
P7503-1 3 LED +B
R7018 100K
R7019 1800
Q7003
R7020 27K
R7021 1K
Q7003 2SD637 2SC1685 (AMP)
R7047 1K
C7026 16V10
Q7005
R7048 1K
Q7005 2SB641 2SA564 (AMP)
R7046 100K
L7001 1m
C7004 8200P
C7035 1000P
C7036 1000P
Q7014
R7058 27K
R7055 1K
Q7014 2SD637 2SC1685 (AMP)
R7097 56K
R7088 56K
Q7018 (INV)
R7099 82K
R7089 10K
Q7019 (INV)
R7098 10K
Q7016 (INV)
R7096 82K
Q7017 (INV)
Q7016~Q7019 2SD636 2SC1684 2SC945A
C7016 16V47
C7017 16V100
TP7003
PLL OSC-1
R7027 150K
R7032 100K
C7018 0.027
R7026 100KB
C7019 50V0.47
R7033 680K
C7021 50V1
TP7006
IC7002 LA7755
VCO
PLL
R7016 470K
C7020 50V2.2
R7060 10K
R7062 27K
R7065 10K
D7003 MA165 1SS133
Q7011
Q7013
D7005 MA1082 RD8.2EB2
Q7012
R7061 10K
R7064 1500
Q7011~Q7013 2SD637 2SC1685 (AMP)
R7028 50KB
R7029 82K
C7024 0.022
R7030 100K
PLL OSC-2
TP7004
R7031 560K
C7023 50V0.47
R7017 470K
C7022 50V2.2
DEF

HEMATIC DIAGRAM

THE MEASUREMENT MODE OF THE DC VOLTAGE ON
THIS DIAGRAM IS PLAYBACK MODE

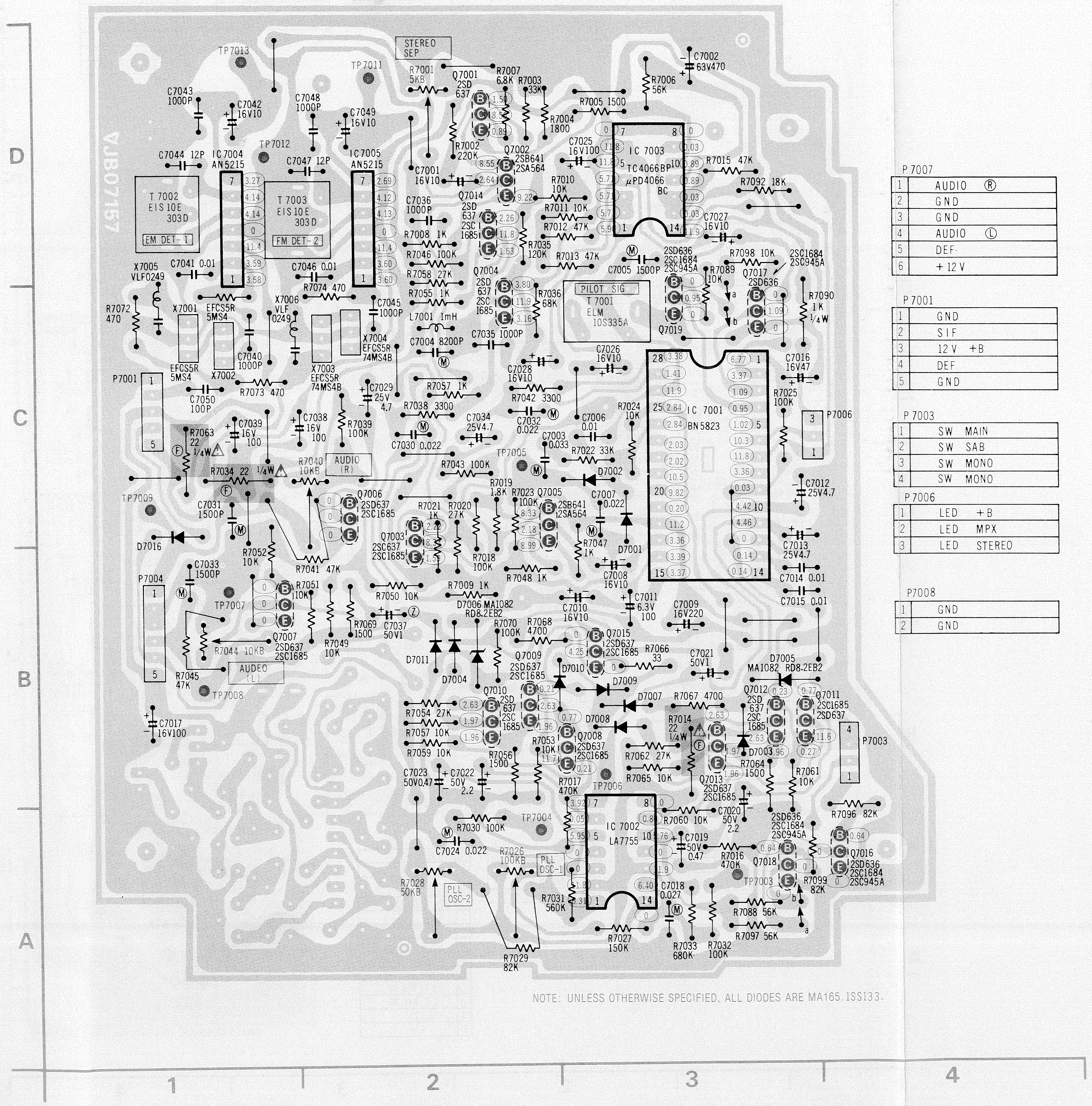

IC7004
AN5215
SIF AMP
LIMITER
FM DET
IC7005
AN5215
FM DETECT
IC7001
BN5823
MATRIX
SW
IC7002
LA7755
VCO
PLL
IC7003
TC4066BP
μPD4066BC
Q7001
2SD637
2SC1685
(AMP)
Q7002
2SB641
2SA564
(AMP)
Q7003
2SD637
2SC1685
(AMP)
Q7005
2SB641
2SA564
(AMP)
Q7014
2SD637
2SC1685
(AMP)
Q7004
2SD637
2SC1685
(AMP)
Q7006 , Q7007
2SD637
2SC1685
Q7016～Q7019
2SD636
2SC1684
2SC945A
Q7011～Q7013
2SD637
2SC1685
(AMP)
Q7008～Q7010
2SD637
2SC1685
(AMP)
Q7015
2SD637
2SC1685
(SW)
T7001
ELM10S335A
T7002
EIS10E303D
T7003
EIS10E303D
X7001
EFCS5R5MS4
X7002
EFCS5R5MS4
X7003
EFCS5R74MS4B
X7004
EFCS5R74MS4B
X7005
VLF0249
X7006
VLF0249
PILOT SIG.
STEREO SEP.
PLL OSC-1
PLL OSC-2
AUDIO (L)
AUDIO (R)
TP7003
TP7004
TP7005
TP7006
TP7007
TP7008
TP7009
TP7011
TP7012
TP7013
SW SAB
SW MAIN
SW MONO
LED MPX
LED STEREO
DEF
P7007
1 AUDIO Ⓡ BP7007-1
2 GND
3 GND
4 AUDIO Ⓛ BP7007-4
5 DEF
6 +12V BP7007-6
D7007～D7011
MA165
1SS133 ×5
2
3
4
5
6
7
8
9
10
11

Audio Decoder	
Q7001	F-7
Q7002	F-8
Q7003	E-5
Q7005	F-5
Q7006	D-9
Q7007	D-9
Q7008	B-6
Q7009	B-6
Q7010	B-7
Q7011	B-5
Q7012	B-5
Q7013	B-5
Q7014	E-5
Q7015	B-8
Q7016	C-5
Q7017	C-5
Q7018	D-5
Q7019	D-5
IC7001	D-7
IC7002	B-3
IC7003	E-10
IC7004	F-3
IC7005	D-3

◀ STEREO SIGNAL LOOP.

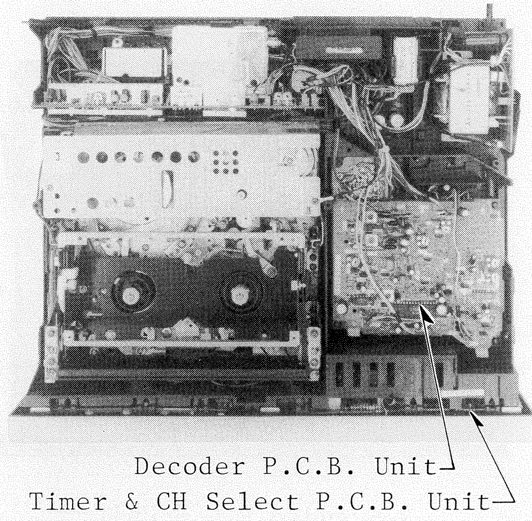
◀ MULTIPLEX SIGNAL LOOP.

DECODER BOARD (VEP07157A)


VJB07157
D
C
B
A
1
2
3
4
STEREO SEP
PILOT SIG
FM DET-1
FM DET-2
AUDIO (R)
AUDIO (L)
PLL OSC-1
PLL OSC-2
IC 7001 BN5823
IC 7002 LA7755
IC 7003 TC4066BP μPD4066BC
IC7004 AN5215
IC7005 AN5215
T 7001 ELM 10S335A
T 7002 EIS10E 303D
T 7003 EIS10E 303D
P7001
P7003
P7004
P7006
TP7001
TP7002
TP7003
TP7004
TP7005
TP7006
TP7007
TP7008
TP7009
TP7011
TP7012
TP7013

NOTE: UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165, 1SS133.

Decoder C.B.A.	
Q7001	D-2
Q7002	D-2
Q7003	B-2
Q7004	C-2
Q7005	C-2
Q7006	C-2
Q7007	B-1
Q7008	B-3
Q7009	B-2
Q7010	B-2
Q7011	B-3
Q7012	B-3
Q7013	B-3
Q7014	D-2
Q7015	B-3
Q7016	A-4
Q7017	C-3
Q7018	A-3
Q7019	C-3
IC7001	C-3
IC7002	A-3
IC7003	D-3
IC7004	D-1
IC7005	D-2


Decoder P.C.B. Unit
Timer & CH Select P.C.B. Unit

P 7007

1	AUDIO Ⓡ
2	GND
3	GND
4	AUDIO Ⓛ
5	DEF
6	+12V

P 7001

1	GND
2	SIF
3	12V +B
4	DEF
5	GND

P 7003

1	SW MAIN
2	SW SAB
3	SW MONO
4	SW MONO

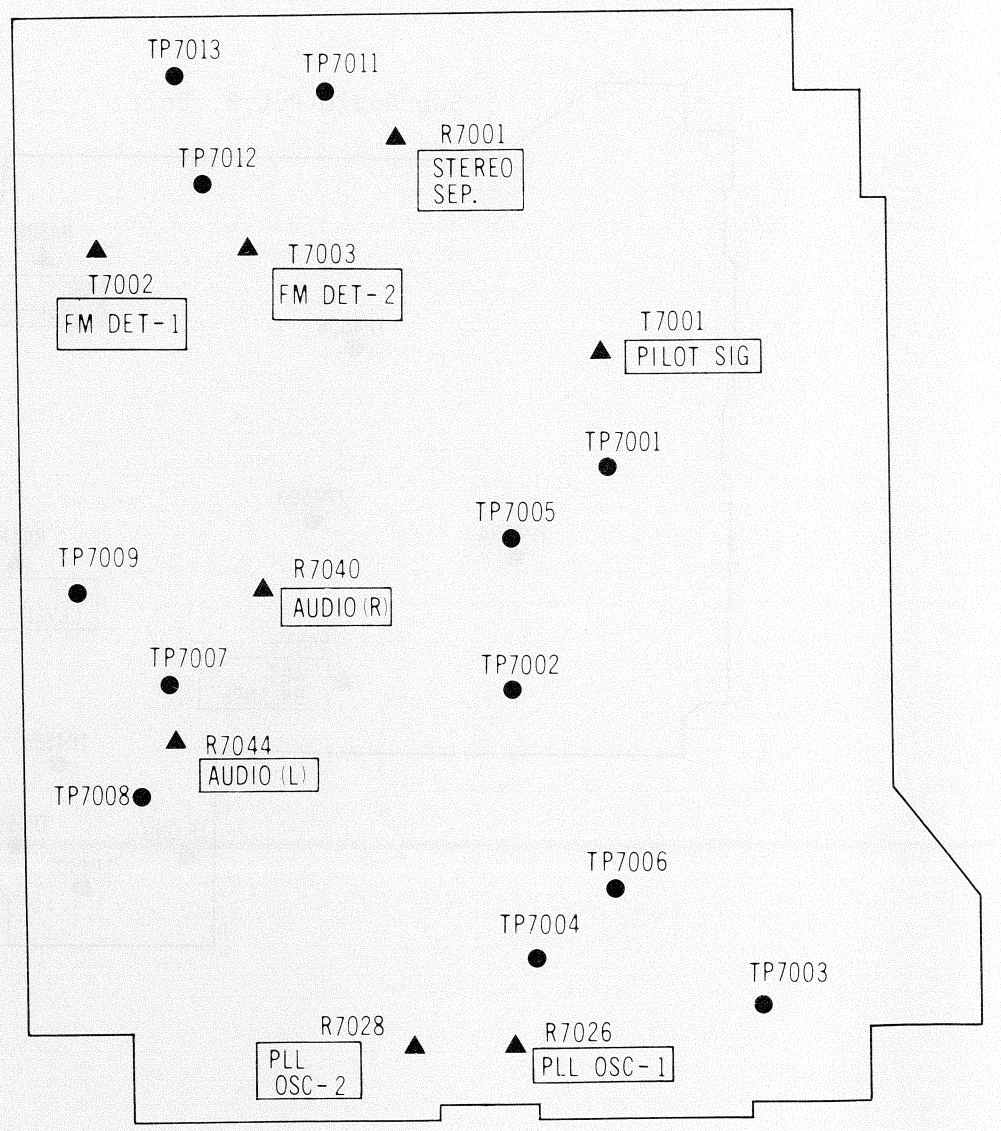
P 7006

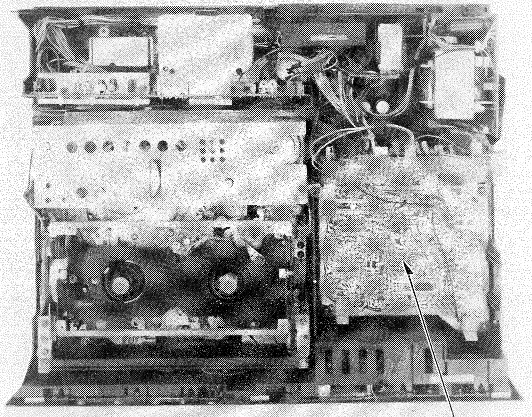
1	LED +B
2	LED MPX
3	LED STEREO

P7008

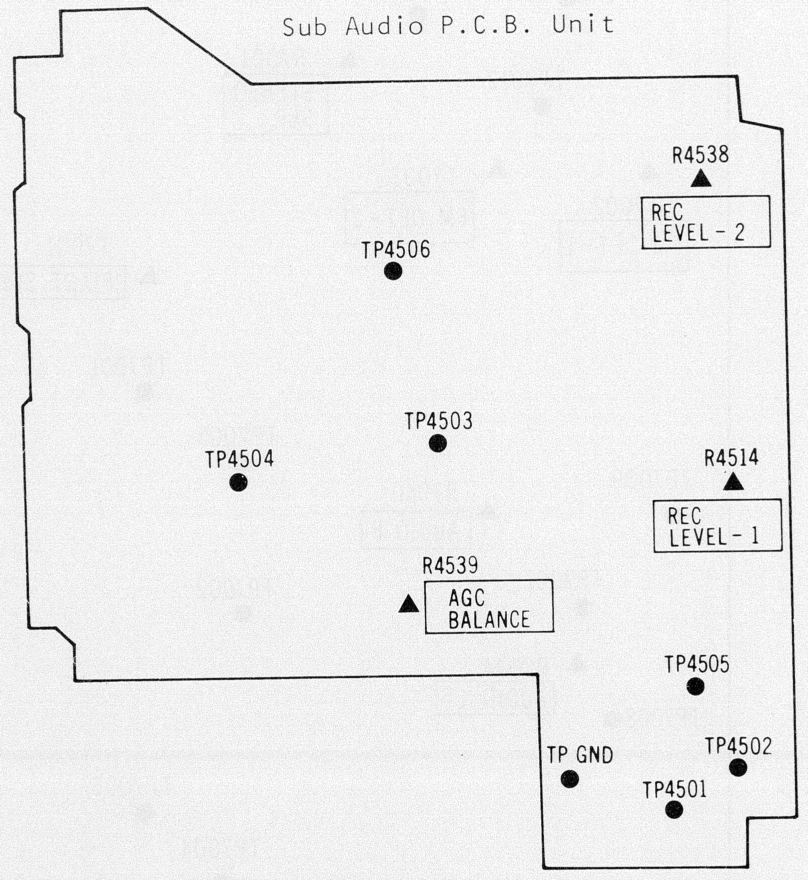
1	GND
2	GND

Decoder P.C.B. Unit


TP7013
TP7011
R7001
STEREO SEP.
TP7012
T7003
FM DET-2
T7002
FM DET-1
T7001
PILOT SIG
TP7001
TP7005
TP7009
R7040
AUDIO (R)
TP7007
TP7002
R7044
AUDIO (L)
TP7008
TP7006
TP7004
TP7003
R7028
PLL OSC-2
R7026
PLL OSC-1


Sub Audio P.C.B Unit

Sub-Audio C.B.A.	
Q4501	A-3
Q4502	A-3
Q4503	C-1
Q4504	C-1
Q4505	C-2
Q4506	A-4
Q4507	C-2
Q4508	B-2
Q4509	C-2
Q4510	C-2
Q4511	C-2
IC4501	D-1
IC4502	B-4
IC4503	D-2
IC4504	D-4
IC4505	C-1


Sub Audio P.C.B. Unit
R4538
REC LEVEL - 2
TP4506
TP4503
TP4504
R4514
REC LEVEL - 1
R4539
AGC BALANCE
TP4505
TP GND
TP4502
TP4501

SUB AUDIO BOARD (VEP04089B)

P4506

1	CH 1 Ⓛ
2	CH 2 Ⓛ
3	ST Ⓛ
4	MONO Ⓛ

P4507

1	AV CH 1
2	GND
3	AV CH 2
4	GND

P4508

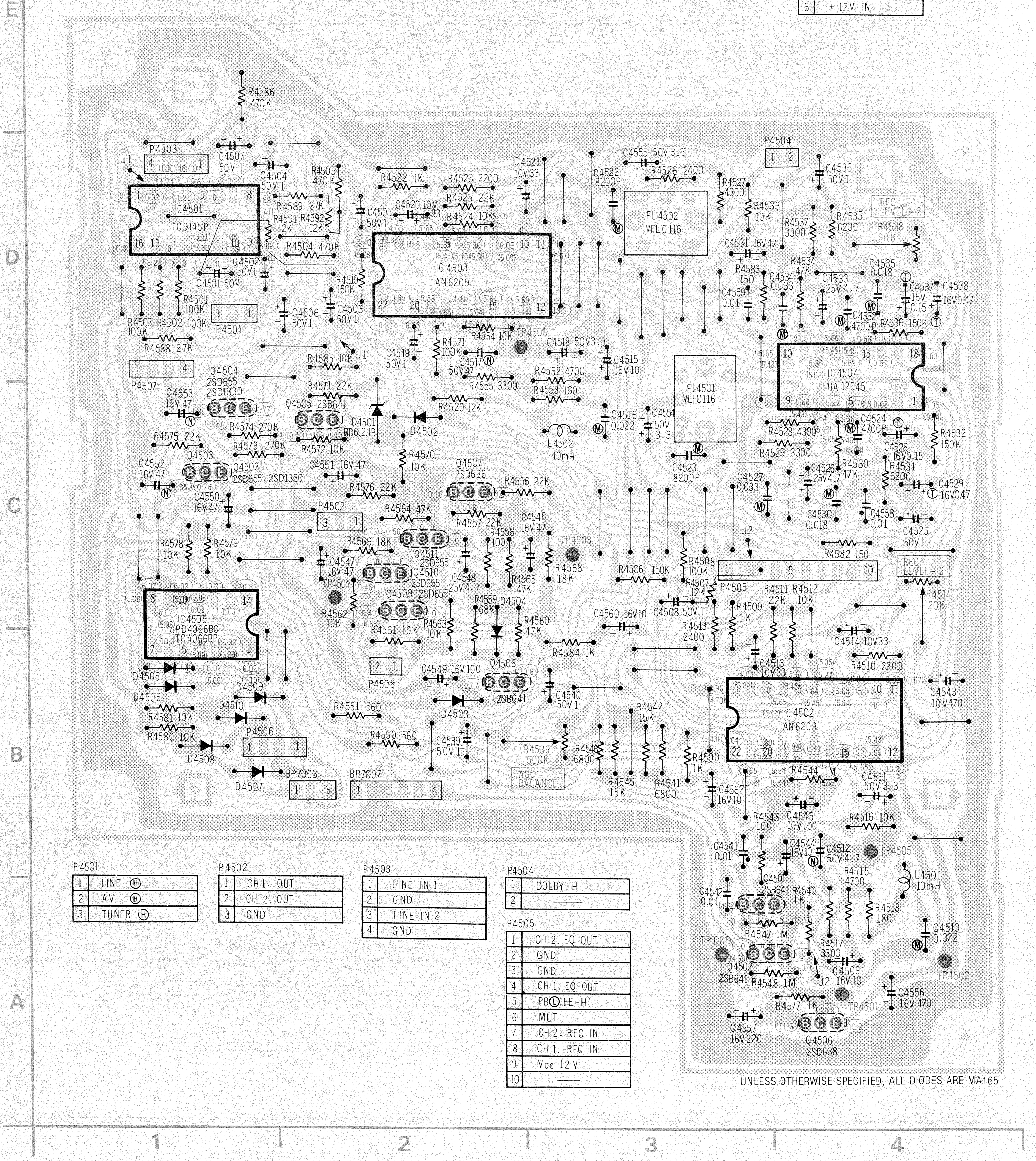
1	AUDIO OUT
2	GND

BP 7003

1	MONO Ⓛ
2	SUB Ⓛ
3	MAIN Ⓛ

BP 7007

1	AUDIO (L)
2	——
3	——
4	AUDIO (R)
5	——
6	+ 12V IN


E
D
C
B
A
1
2
3
4
IC4501
TC9145P
IC 4503
AN6209
IC 4504
HA 12045
IC 4502
AN6209
IC4505
μPD4066BC
TC4066BP
FL 4502
VFL0116
FL4501
VFL0116
REC LEVEL-2
REC LEVEL-1
AGC BALANCE
TP4501
TP4502
TP4503
TP4505
TP4506
TP GND
J1
J2
L4501 10mH
L4502 10mH

P4501

1	LINE Ⓗ
2	AV Ⓗ
3	TUNER Ⓗ

P4502

1	CH1. OUT
2	CH 2. OUT
3	GND

P4503

1	LINE IN 1
2	GND
3	LINE IN 2
4	GND

P4504

1	DOLBY H
2	——

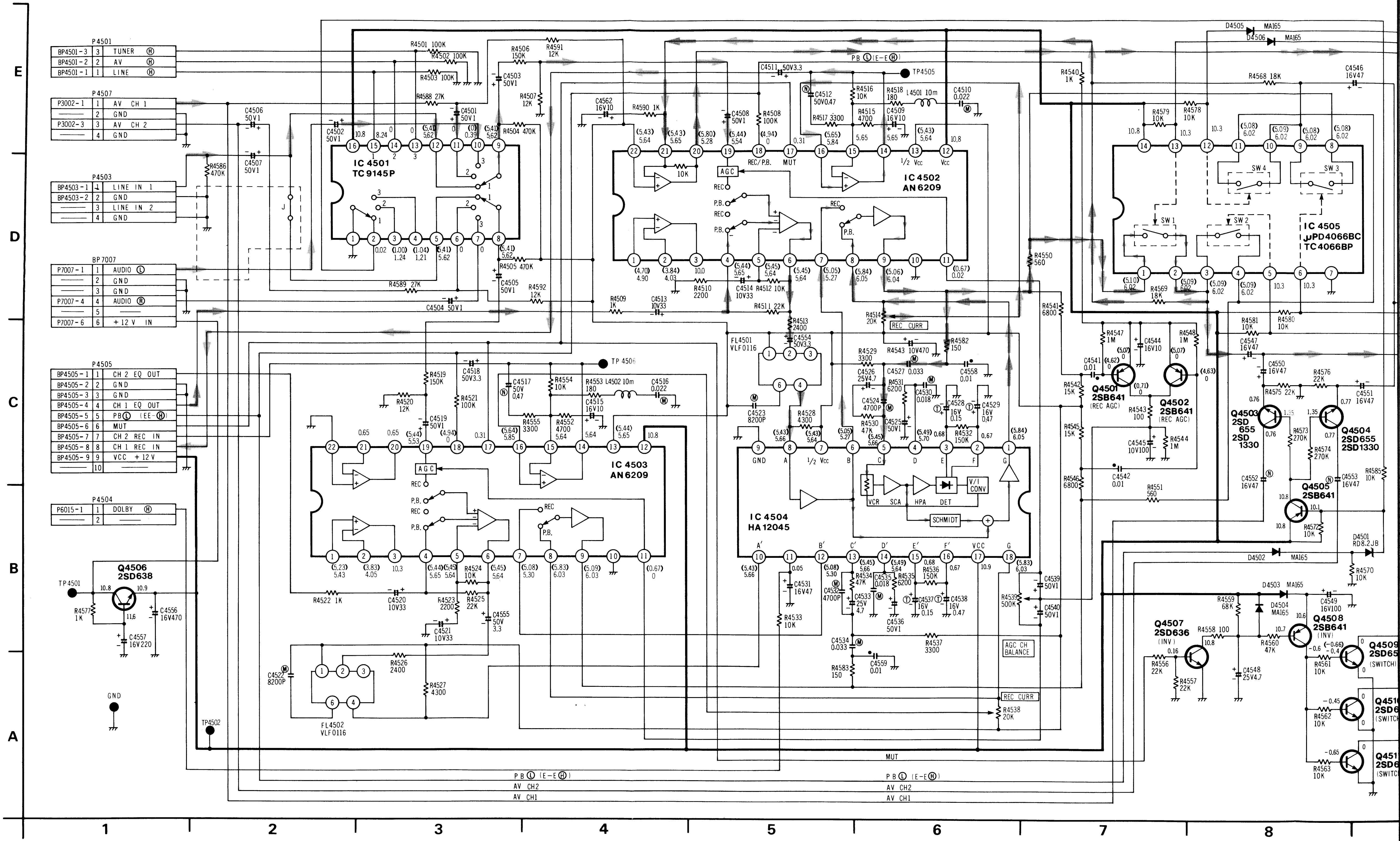
P4505

1	CH 2. EQ OUT
2	GND
3	GND
4	CH 1. EQ OUT
5	PBⓁ(EE-H)
6	MUT
7	CH 2. REC IN
8	CH 1. REC IN
9	Vcc 12 V
10	——

UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165

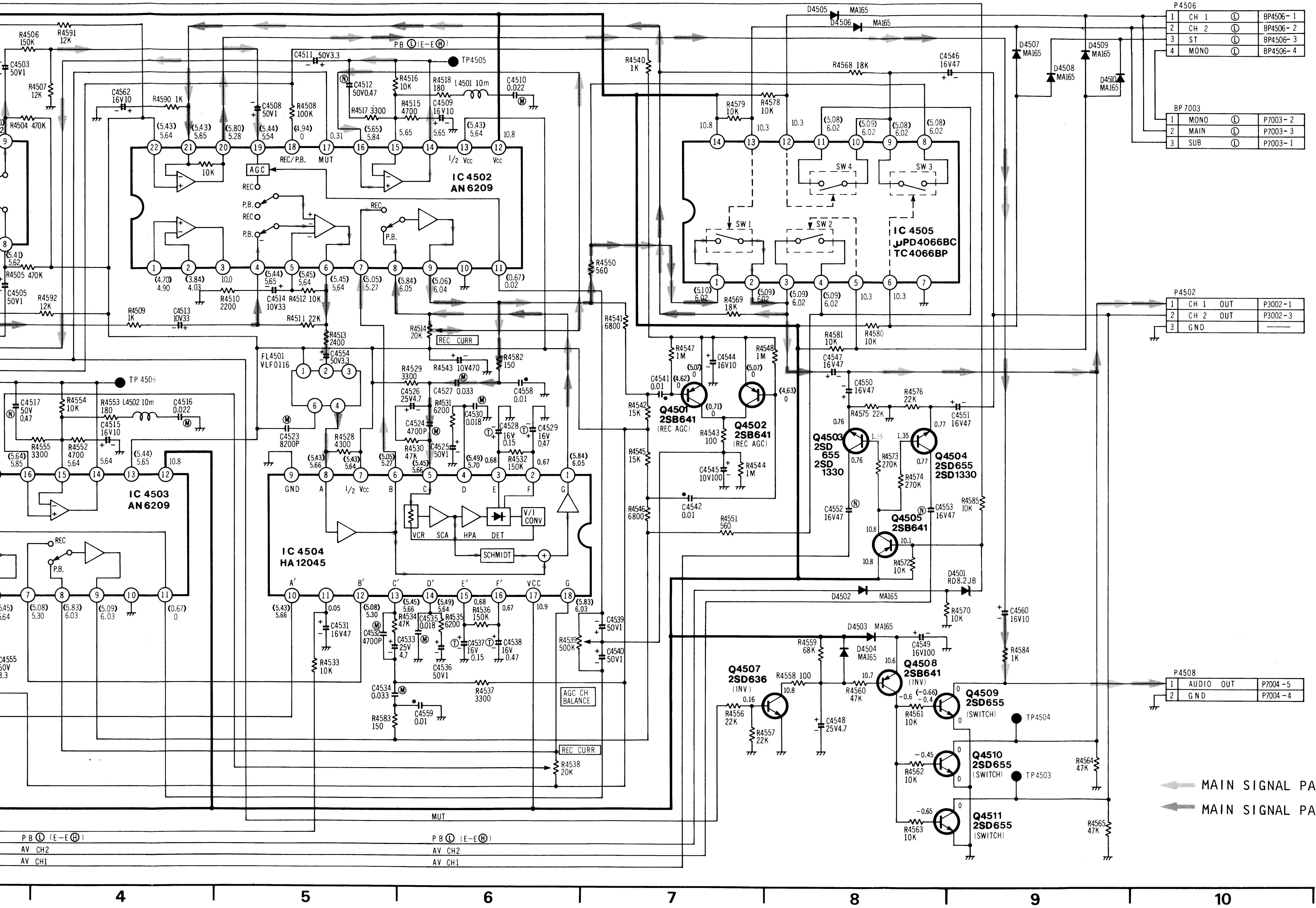
SUB AUDIO SCHEMATIC DIAGRAM

THE MEASUREMENT MODE
THIS DIAGRAM IS STOP MO
THE MEASUREMENT MODE
THIS DIAGRAM IS PLAYBAC



P4501
BP4501-3 3 TUNER Ⓗ
BP4501-2 2 AV Ⓗ
BP4501-1 1 LINE Ⓗ
P4507
P3002-1 1 AV CH 1
2 GND
P3002-3 3 AV CH 2
4 GND
P4503
BP4503-1 1 LINE IN 1
BP4503-2 2 GND
3 LINE IN 2
4 GND
BP7007
P7007-1 1 AUDIO Ⓛ
2 GND
3 GND
P7007-4 4 AUDIO Ⓡ
5
P7007-6 6 +12 V IN
P4505
BP4505-1 1 CH 2 EQ OUT
BP4505-2 2 GND
BP4505-3 3 GND
BP4505-4 4 CH 1 EQ OUT
BP4505-5 5 PBⓁ (EE-Ⓗ)
BP4505-6 6 MUT
BP4505-7 7 CH 2 REC IN
BP4505-8 8 CH 1 REC IN
BP4505-9 9 VCC +12 V
10
P4504
P6015-1 1 DOLBY Ⓗ
2
IC 4501
TC9145P
IC 4502
AN6209
IC 4503
AN6209
IC 4504
HA12045
IC 4505
μPD4066BC
TC4066BP
SW 1
SW 2
SW 3
SW 4
AGC
REC
P.B.
REC/P.B.
MUT
1/2 Vcc
Vcc
GND
VCR
SCA
HPA
DET
V/I CONV
SCHMIDT
FL4501
VLF0116
FL4502
VLF0116
TP4501
TP4502
TP4505
TP4506
GND
Q4501
2SB641
(REC AGC)
Q4502
2SB641
(REC AGC)
Q4503
2SD655
2SD1330
Q4504
2SD655
2SD1330
Q4505
2SB641
Q4506
2SD638
Q4507
2SD636
(INV)
Q4508
2SB641
(INV)
Q4509
2SD65
(SWITCH)
Q451
2SD6
(SWITCH)
Q451
2SD6
(SWITCH)
D4501
RD8.2JB
D4502 MA165
D4503 MA165
D4504 MA165
D4505 MA165
D4506 MA165
L4501 10m
L4502 10m
REC CURR
AGC CH BALANCE
PBⓁ (E-EⒽ)
AV CH2
AV CH1
E
D
C
B
A
1
2
3
4
5
6
7
8

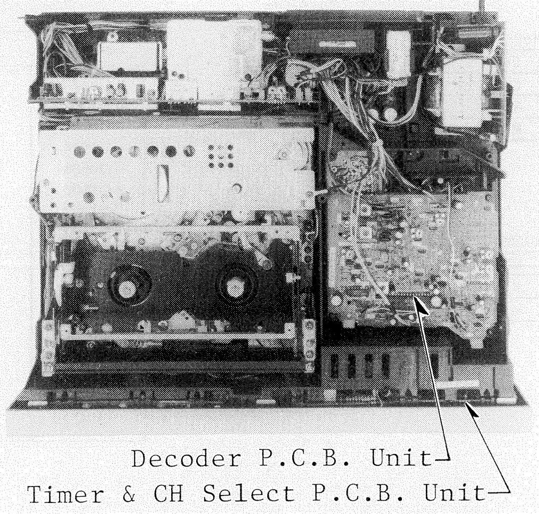
THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS (   ) ON THIS DIAGRAM IS STOP MODE
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE


IC 4502
AN6209
IC 4503
AN6209
IC 4504
HA12045
IC 4505
μPD4066BC
TC4066BP
Q4501
2SB641
(REC AGC)
Q4502
2SB641
(REC AGC)
Q4503
2SD655
2SD1330
Q4504
2SD655
2SD1330
Q4505
2SB641
Q4507
2SD636
(INV)
Q4508
2SB641
(INV)
Q4509
2SD655
(SWITCH)
Q4510
2SD655
(SWITCH)
Q4511
2SD655
(SWITCH)
FL4501
VLF0116
P4506
CH 1
CH 2
ST
MONO
BP4506-1
BP4506-2
BP4506-3
BP4506-4
BP7003
MONO
MAIN
SUB
P7003-2
P7003-3
P7003-1
P4502
CH 1 OUT
CH 2 OUT
GND
P3002-1
P3002-3
P4508
AUDIO OUT
GND
P7004-5
P7004-4
TP4505
TP4504
TP4503
AGC
REC/P.B.
MUT
1/2 Vcc
Vcc
SW 1
SW 2
SW 3
SW 4
VCR
SCA
HPA
DET
V/I CONV
SCHMIDT
REC CURR
AGC CH BALANCE
MUT
PB Ⓛ (E-EⒽ)
AV CH2
AV CH1
4
5
6
7
8
9
10

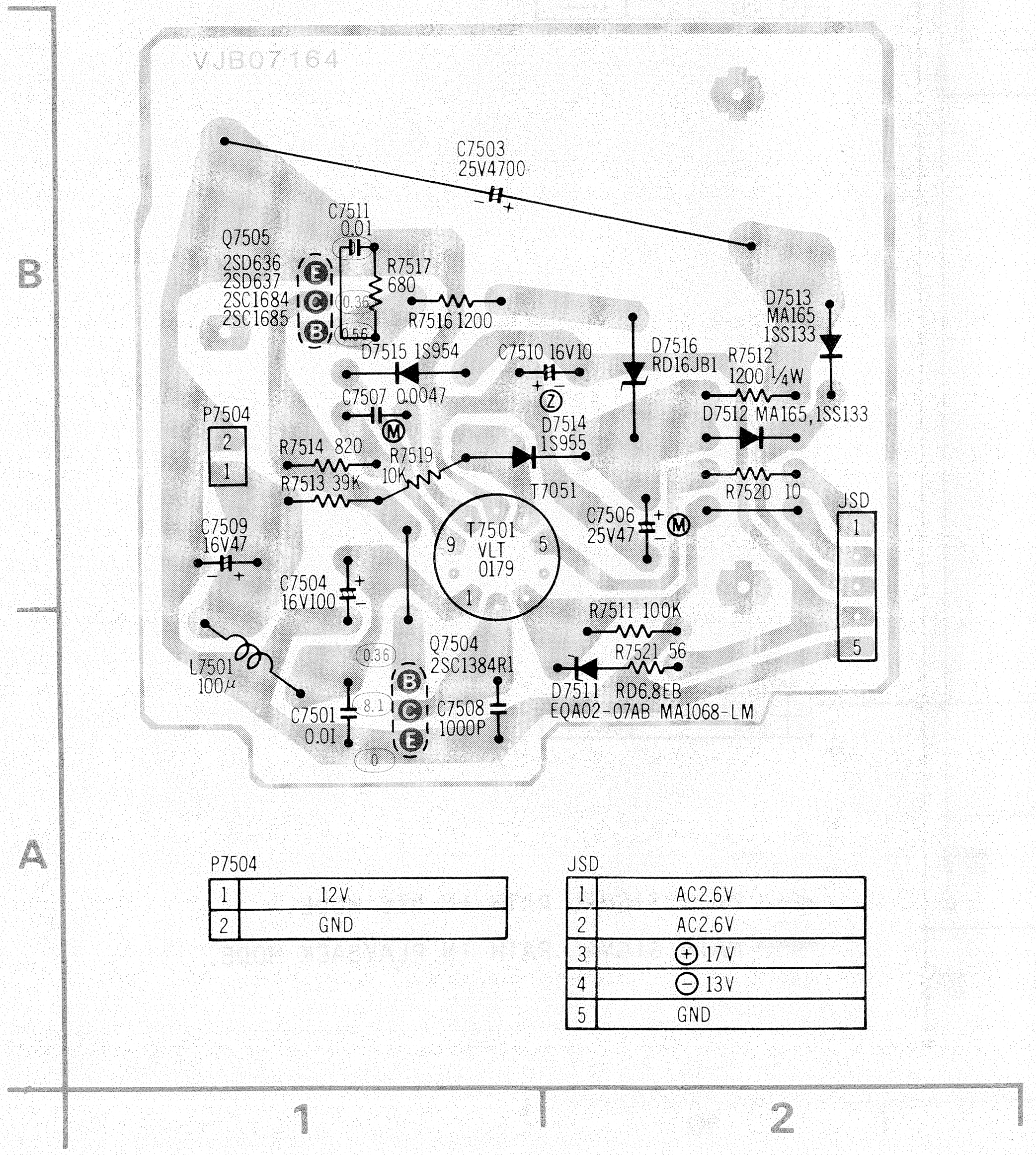
Sub Audio	
Q4501	C-7
Q4502	C-7
Q4503	C-8
Q4504	C-9
Q4505	B-8
Q4506	B-1
Q4507	B-8
Q4508	B-8
Q4509	B-9
Q4510	A-9
Q4511	A-9
IC4501	D-3
IC4502	D-6
IC4503	B-4
IC4504	B-6
IC4505	D-8

MAIN SIGNAL PATH IN REC MODE.

MAIN SIGNAL PATH IN PLAYBACK MODE.


Decoder P.C.B. Unit
Timer & CH Select P.C.B. Unit

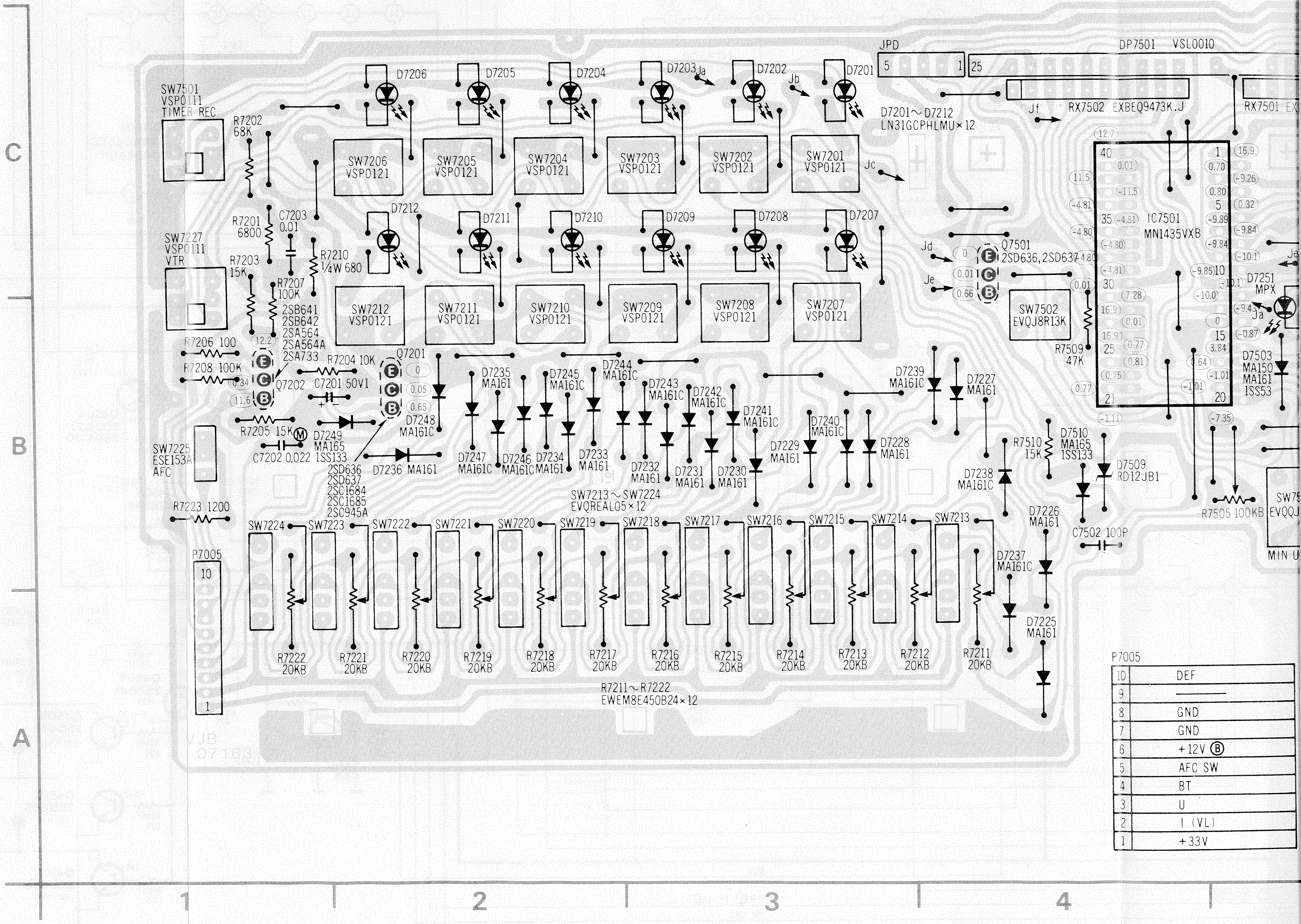
BACK-UP BOARD (VEP07164A)


VJB07164
C7503
25V4700
Q7505
2SD636
2SD637
2SC1684
2SC1685
C7511
0.01
R7517
680
R7516 1200
D7513
MA165
1SS133
D7516
RD16JB1
R7512
1200 1/4W
D7515 1S954
C7510 16V10
C7507 0.0047
D7514
1S955
D7512 MA165, 1SS133
P7504
R7514 820
R7513 39K
R7519
10K
T7051
R7520 10
JSD
C7509
16V47
T7501
VLT
0179
C7506
25V47
C7504
16V100
R7511 100K
R7521 56
L7501
100μ
Q7504
2SC1384R1
C7508
1000P
C7501
0.01
D7511
EQA02-07AB MA1068-LM
RD6.8EB
A
B
1
2

P7504	
1	12V
2	GND

JSD	
1	AC2.6V
2	AC2.6V
3	⊕ 17V
4	⊖ 13V
5	GND

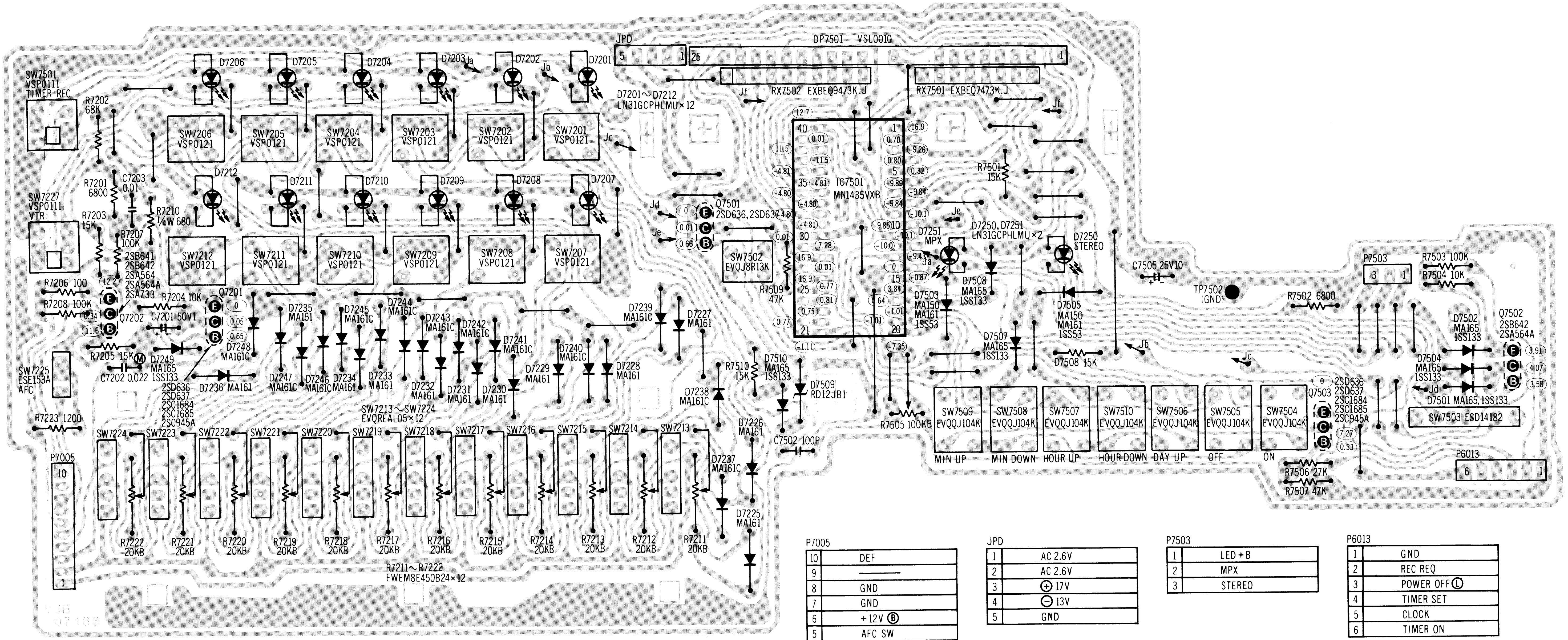
TIMER & CH SELECT BOARD (VEP07163A)


JPD
DP7501 VSL0010
SW7501
VSP0111
TIMER REC
R7202
68K
D7206
D7205
D7204
D7203
D7202
D7201
D7201~D7212
LN31GCPHLMU×12
RX7502 EXBEQ9473K.J
RX7501
SW7206 VSP0121
SW7205 VSP0121
SW7204 VSP0121
SW7203 VSP0121
SW7202 VSP0121
SW7201 VSP0121
R7201
6800
C7203
0.01
SW7227
VSP0111
VTR
D7212
D7211
D7210
D7209
D7208
D7207
R7210
1/4W 680
R7203
15K
R7207
100K
SW7212 VSP0121
SW7211 VSP0121
SW7210 VSP0121
SW7209 VSP0121
SW7208 VSP0121
SW7207 VSP0121
Q7501
2SD636, 2SD637
IC7501
MN1435VXB
SW7502
EVQJ8R13K
R7509
47K
D7251
MPX
D7503
MA150
MA161
1SS53
2SB641
2SB642
2SA564
2SA564A
2SA733
R7206 100
R7208 100K
R7204 10K
Q7201
Q7202
C7201 50V1
R7205 15K
C7202 0.022
D7249
MA165
1SS133
D7248
MA161C
2SD636
2SD637
2SC1684
2SC1685
2SC945A
D7236 MA161
D7235 MA161
D7245 MA161C
D7244 MA161C
D7243 MA161C
D7242 MA161C
D7241 MA161C
D7240 MA161C
D7239 MA161C
D7227 MA161
D7247 MA161C
D7246 MA161C
D7234 MA161
D7233 MA161
D7232 MA161
D7231 MA161
D7230 MA161
D7229 MA161
D7228 MA161
D7238 MA161C
R7510 15K
D7510 MA165 1SS133
D7509 RD12JB1
R7505 100KB
SW7225
ESE153A
AFC
SW7213~SW7224
EVQREAL05×12
R7223 1200
D7226 MA161
C7502 100P
SW7224
SW7223
SW7222
SW7221
SW7220
SW7219
SW7218
SW7217
SW7216
SW7215
SW7214
SW7213
P7005
D7237 MA161C
D7225 MA161
R7222 20KB
R7221 20KB
R7220 20KB
R7219 20KB
R7218 20KB
R7217 20KB
R7216 20KB
R7215 20KB
R7214 20KB
R7213 20KB
R7212 20KB
R7211 20KB
R7211~R7222
EWEM8E450B24×12
VJB
07163
MIN
A
B
C
1
2
3
4

P7005	
10	DEF
9	————
8	GND
7	GND
6	+12V Ⓑ
5	AFC SW
4	BT
3	U
2	I (VL)
1	+33V

MER & CH SELECT BOARD (VEP07163A)

Timer & Ch Select C.B.A	
Q7201	B-2
Q7202	B-1
Q7501	B-4
Q7502	B-7
Q7503	B-6



JPD
DP7501 VSL0010
SW7501 VSP0111 TIMER REC
SW7227 VSP0111 VTR
SW7225 ESE153A AFC
D7201～D7212 LN31GCPHLMU×12
SW7201～SW7212 VSP0121
RX7502 EXBEQ9473K.J
RX7501 EXBEQ7473K.J
IC7501 MN1435VXB
Q7501 2SD636, 2SD637
Q7201 2SB641 2SB642 2SA564 2SA564A 2SA733
Q7202 2SD636 2SD637 2SC1684 2SC1685 2SC945A
SW7502 EVQJ8R13K
D7250, D7251 LN31GCPHLMU×2
D7251 MPX
D7250 STEREO
C7505 25V10
TP7502 (GND)
P7503
R7503 100K
R7504 10K
R7502 6800
Q7502 2SB642 2SA564A
Q7503 2SD636 2SD637 2SC1684 2SC1685 2SC945A
D7501 MA165, 1SS133
SW7503 ESD14182
P6013
SW7504～SW7510 EVQQJ104K
MIN UP
MIN DOWN
HOUR UP
HOUR DOWN
DAY UP
OFF
ON
R7505 100KB
R7506 27K
R7507 47K
C7502 100P
D7509 RD12JB1
SW7213～SW7224 EVQREAL05×12
R7211～R7222 EWEM8E450B24×12
P7005

P7005	
10	DEF
9	————
8	GND
7	GND
6	+12V Ⓑ
5	AFC SW
4	BT
3	U
2	I (VL)
1	+33V

JPD	
1	AC 2.6V
2	AC 2.6V
3	⊕ 17V
4	⊖ 13V
5	GND

P7503	
1	LED+B
2	MPX
3	STEREO

P6013	
1	GND
2	REC REQ
3	POWER OFF Ⓛ
4	TIMER SET
5	CLOCK
6	TIMER ON

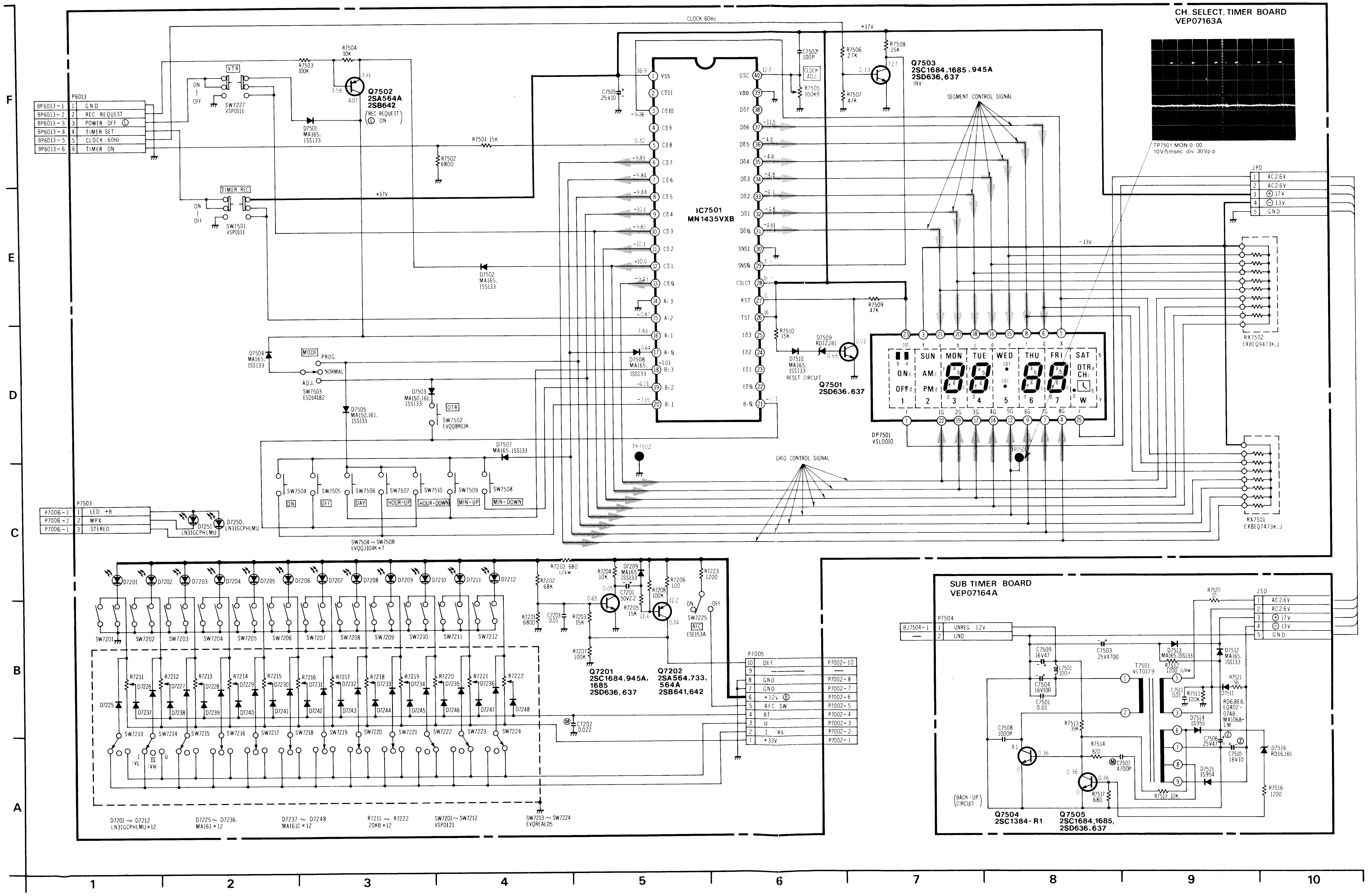
1 2 3 4 5 6 7

TIMER & CH SELECT SCHEMATIC DIAGRAM

GRIDS CONTROL SIGNAL.
SEGMENTS CONTROL SIGNAL.

THE MEASUREMENT MODE OF THE D.C. VOLTAGE ON THIS DIAGRAM
IN THE FOLLOWING CONDITION.
1) MODE SELECTOR : CLOCK
2) SELECTION TIME : MON 0:00

CH Select, Timer & Sub Timer	
Q7201	B-5
Q7202	B-5
Q7501	D-7
Q7502	F-3
Q7503	F-7
Q7504	A-8
Q7505	A-8
IC7501	F-6

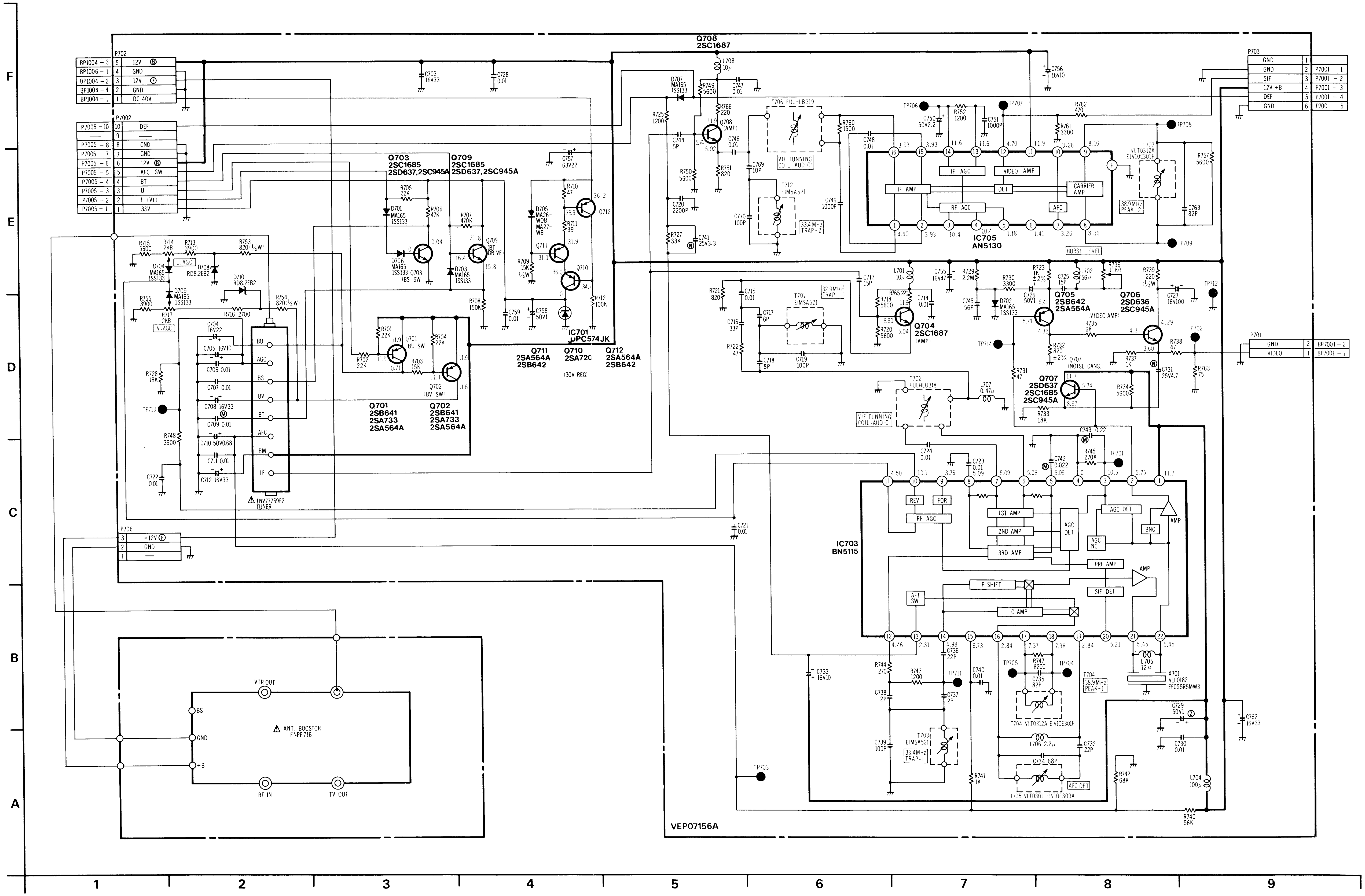


CH. SELECT, TIMER BOARD
VEP07163A
SUB TIMER BOARD
VEP07164A
IC7501
MN1435VXB
Q7502
2SA564A
2SB642
Q7503
2SC1684,1685,945A
2SD636,637
Q7501
2SD636.637
Q7201
2SC1684,945A,
1685
2SD636,637
Q7202
2SA564,733,
564A
2SB641,642
Q7504
2SC1384-R1
Q7505
2SC1684,1685,
2SD636.637
DP7501
VSL0010
TP7501 MON 0:00
10V/5msec. div. 30Vp-p
TP7502
SEGMENT CONTROL SIGNAL
GRID CONTROL SIGNAL
CLOCK 60Hz
+17V
-13V
P6013
GND
REC REQUEST
POWER OFF
TIMER SET
CLOCK 60Hz
TIMER ON
P7503
LED +B
MPX
STEREO
P7005
P7504
UNREG 12V
GND
JPD
JSD
AC2.6V
AC2.6V
17V
13V
GND
VTR
TIMER REC
MODE
PROG.
NORMAL
ADJ.
OTR
ON
OFF
DAY
HOUR-UP
HOUR-DOWN
MIN-UP
MIN-DOWN
AFC
DEF.
+12V
AFC SW
BT
U
+33V
RX7502
EXBEQ9473KJ
RX7501
EXBEQ7473KJ
SW7504 ~ SW7508
EVQQJ104K×7
D7201 ~ D7212
LN31GCPHLMU×12
D7225 ~ D7236
MA161×12
D7237 ~ D7248
MA161C×12
R7211 ~ R7222
20K8×12
SW7201 ~ SW7212
VSP0121
SW7213 ~ SW7224
EVQREAL05
(BACK-UP CIRCUIT)
SUN
MON
TUE
WED
THU
FRI
SAT
ON
OFF
AM
PM
OTR
CH
W
1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F

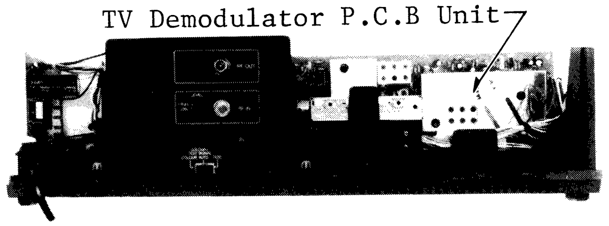
TV DEMODULATOR SCHEMATIC DIAGRAM

THE MEASUREMENT CONDITION OF THE D.C. VOLTAGE ON THIS DIAGRAM
CH. SELECT SWITCHES ARE ALL OFF
AND POTENTIOMETERS ARE ALL F.C.C.W.

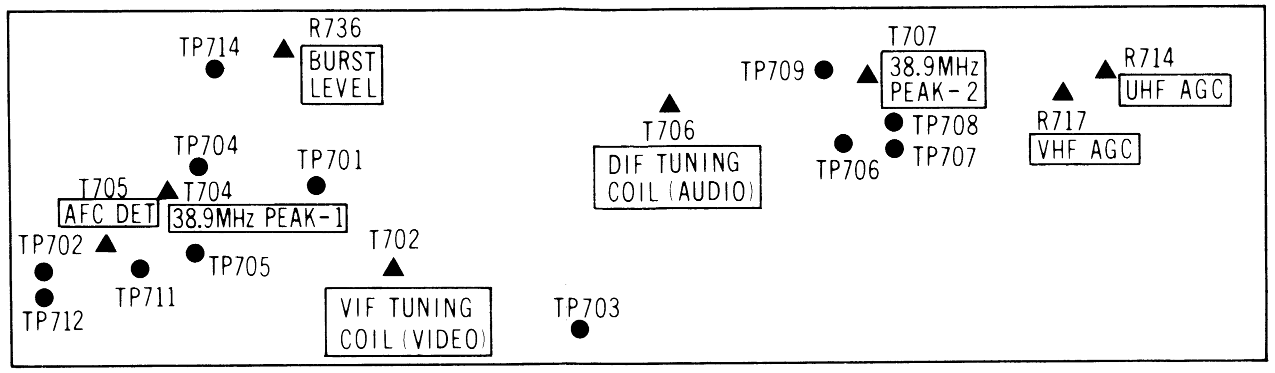
TV Demodurator	
Q701	D-3
Q702	D-4
Q703	E-3
Q704	D-7
Q705	D-8
Q706	D-8
Q707	D-3
Q708	F-5
Q709	E-4
Q710	E-4
Q711	E-4
Q712	E-4
IC701	D-4
IC703	C-7
IC705	E-7


F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
P702
BP1004 − 3 | 5 | 12V Ⓑ
BP1006 − 1 | 4 | GND
BP1004 − 2 | 3 | 12V Ⓕ
BP1004 − 4 | 2 | GND
BP1004 − 1 | 1 | DC 40V
P7002
P7005 − 10 | 10 | DEF
9
P7005 − 8 | 8 | GND
P7005 − 7 | 7 | GND
P7005 − 6 | 6 | 12V Ⓑ
P7005 − 5 | 5 | AFC SW
P7005 − 4 | 4 | BT
P7005 − 3 | 3 | U
P7005 − 2 | 2 | I (VL)
P7005 − 1 | 1 | 33V
C703 16V33
C728 0.01
Q703 2SC1685 2SD637, 2SC945A
Q709 2SC1685 2SD637, 2SC945A
R705 22K
R706 47K
D701 MA165 1SS133
D706 MA165 1SS133 Q703 (BS SW)
R707 470K
Q709 (BT DRIVE)
D703 MA165 1SS133
R708 150K
C757 63V22
D705 MA26-WOB MA27-WB
R710 47
R711 39
R709 15K 1/4W
Q711
Q710
Q712
R712 100K
C759 0.01
C758 50V1
IC701 μPC574JK
Q711 2SA564A 2SB642
Q710 2SA720
(30V REG)
Q712 2SA564A 2SB642
R715 5600
R714 2KB
R713 3900
U.AGC
R753 820 (1/4W)
D704 MA165 1SS133
D708 RD8.2EB2
D710 RD8.2EB2
D709 MA165 1SS133
R755 3900
R717 2KB
V.AGC
R716 2700
R754 820 (1/4W)
C704 16V22
C705 16V10
C706 0.01
C707 0.01
C708 16V33
C709 0.01
C710 50V0.68
C711 0.01
C712 16V33
R728 18K
TP713
R748 3900
C722 0.01
BU
AGC
BS
BV
BT
AFC
BM
IF
TNV77759F2 TUNER
R701 22K
R702 22K
Q701 (BU SW)
R704 22K
R703 15K
Q702 (BV SW)
Q701 2SB641 2SA733 2SA564A
Q702 2SB641 2SA733 2SA564A
P706
3 | +12V Ⓕ
2 | GND
1 | —
VTR OUT
BS
GND
+B
ANT. BOOSTOR ENPE716
RF IN
TV OUT
Q708 2SC1687
L708 10μ
D707 MA165 1SS133
R749 5600
C747 0.01
R725 1200
R766 220
Q708 (AMP)
C744 5P
C746 0.01
R750 5600
R751 820
C720 2200P
R727 33K
C741 25V3.3
T706 EULHLB319
VIF TUNNING COIL (AUDIO)
C769 10P
T712 EIM5A521
C770 100P
33.4MHz TRAP-2
R760 1500
C748 0.01
C749 1000P
TP706
C750 50V2.2
R752 1200
C751 1000P
TP707
C756 16V10
R762 470
R761 3300
IF AGC
VIDEO AMP
IF AMP
DET
CARRIER AMP
RF AGC
AFC
IC705 AN5130
BURST LEVEL
TP708
T707 VLT0312A E1V10E301F
38.9MHz PEAK-2
R757 5600
C763 82P
TP709
P703
GND | 1
GND | 2 | P7001 − 1
SIF | 3 | P7001 − 2
12V +B | 4 | P7001 − 3
DEF | 5 | P7001 − 4
GND | 6 | P700 − 5
R721 820
C715 0.01
T701 EIMSA521
32.9MHz TRAP
C717 6P
C716 33P
R722 47
C718 8P
C719 100P
C713 15P
L701 10μ
R765 220
R718 5600
R720 5600
C714 0.01
Q704 2SC1687 (AMP)
C755 16V47
R729 2.2M
R730 3300
C745 56P
D702 MA165 1SS133
C726 50V1
R723 1K ±2%
C725 15P
L702 56μ
R736 10KB
Q705 2SB642 2SA564A
(VIDEO AMP)
Q706 2SD636 2SC945A
R735 68
R739 220 (1/4W)
C727 16V100
TP712
TP714
R732 820 ±2%
Q707 (NOISE CANS.)
R737 1K
R738 47
TP702
P701
GND | 2 | BP7001 − 2
VIDEO | 1 | BP7001 − 1
C731 25V4.7
R763 75
R731 47
Q707 2SD637 2SC1685 2SC945A
R734 5600
R733 18K
T702 EULHLB318
VIF TUNNING COIL (AUDIO)
L707 0.47μ
C724 0.01
C723 0.01
C743 0.22
C742 0.022
R745 270K
TP701
C721 0.01
IC703 BN5115
REV
FOR
RF AGC
1ST AMP
2ND AMP
3RD AMP
AGC DET
AGC DET
AGC NC
BNC
AMP
PRE AMP
AMP
P SHIFT
SIF DET
AFT SW
C AMP
C733 16V10
R744 270
R743 1200
C736 22P
TP711
C738 2P
C737 2P
C739 100P
T703 EIM5A521
33.4MHz TRAP-1
C740 0.01
R741 1K
TP705
R747 8200
TP704
C735 82P
T704 38.9MHz PEAK-1
T704 VLT0312A EIV10E301F
L706 2.2μ
C732 22P
C734 68P
AFC DET
T705 VLT0301 EIV10E309A
L705 12μ
X701 VLF0182 EFCS5R5MW3
C729 50V1
C730 0.01
C762 16V33
R742 68K
L704 100μ
R740 56K
TP703
VEP07156A

TV DEMODULATOR BOARD (VEP07156A)


TV Demodulator P.C.B Unit

TV Demodulator P.C.B. Unit


TP714
R736
BURST LEVEL
TP709
T707
38.9MHz PEAK-2
R714
UHF AGC
TP708
TP707
R717
VHF AGC
T706
DIF TUNING COIL (AUDIO)
TP706
TP704
TP701
T705
AFC DET
T704
38.9MHz PEAK-1
TP702
TP705
T702
TP711
VIF TUNING COIL (VIDEO)
TP703
TP712

TV Demodulator C.B.A.	
Q701	A-6
Q702	A-6
Q703	B-6
Q704	A-3
Q705	B-2
Q706	B-1
Q707	B-2
Q708	B-3
Q709	B-5
Q710	A-6
Q711	A-6
Q712	A-6
IC701	A-6
IC703	A-2
IC705	B-4

P701

1	VIDEO
2	GND

P702

1	DC 40V
2	GND
3	12V Ⓕ
4	GND
5	12V

P703

1	GND
2	GND
3	SIF
4	12V +B
5	DEF
6	GND

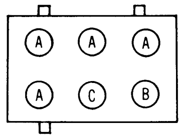
P704

1	30V
2	VL
3	U
4	BT
5	AFC
6	12V
7	GND
8	GND
9	12V
10	DEF

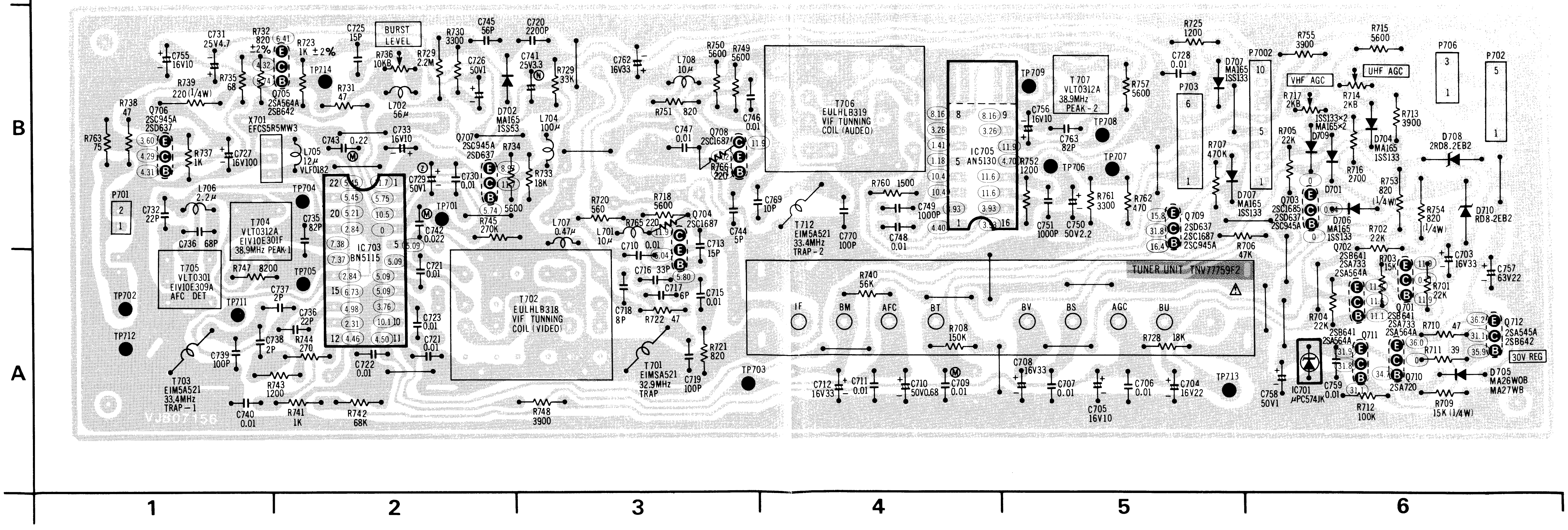
P706

1	——
2	GND
3	+12V Ⓕ

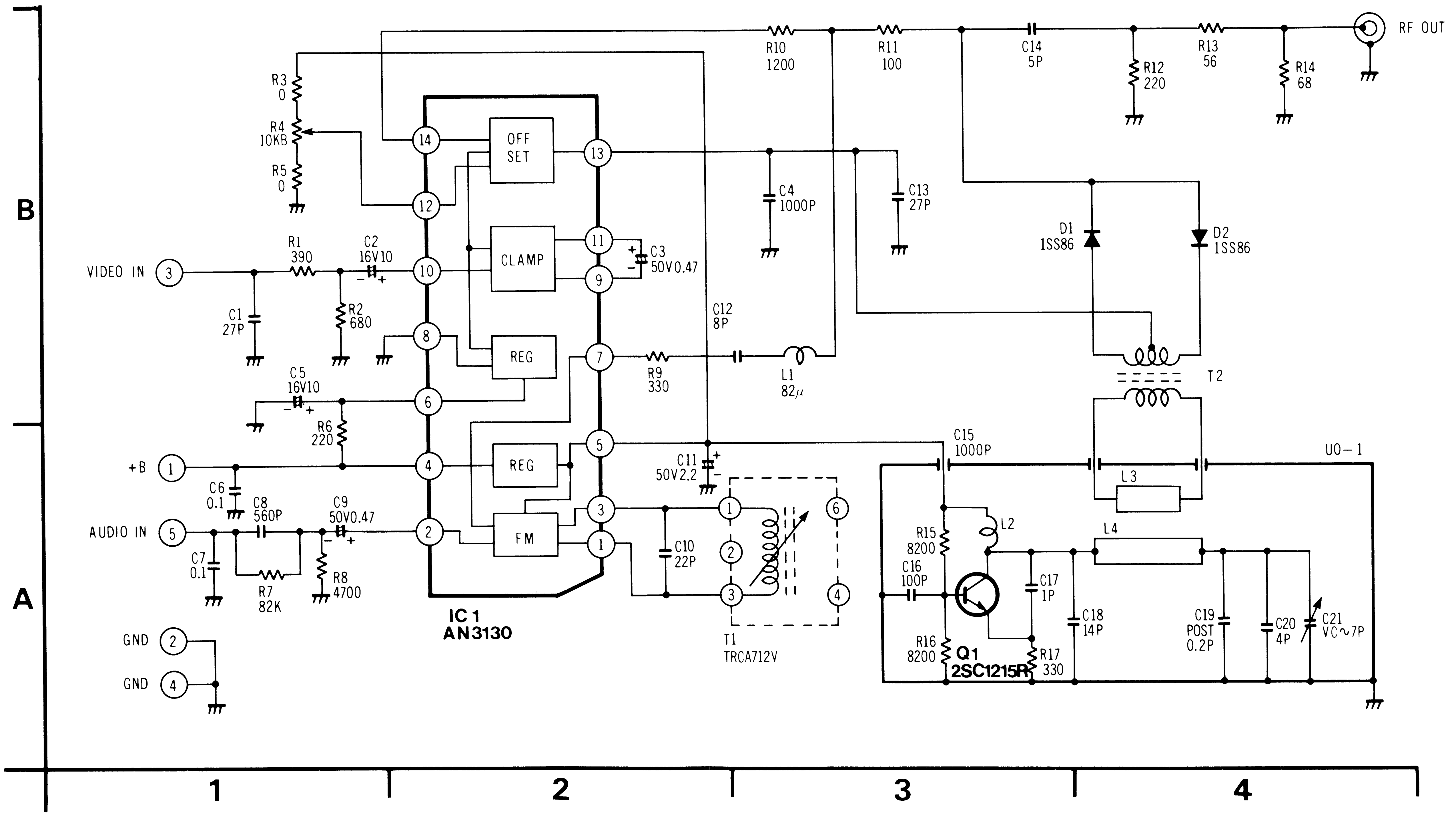
T702 , T706



B : 40.4MHz TRAP
C : 31.9MHz TRAP

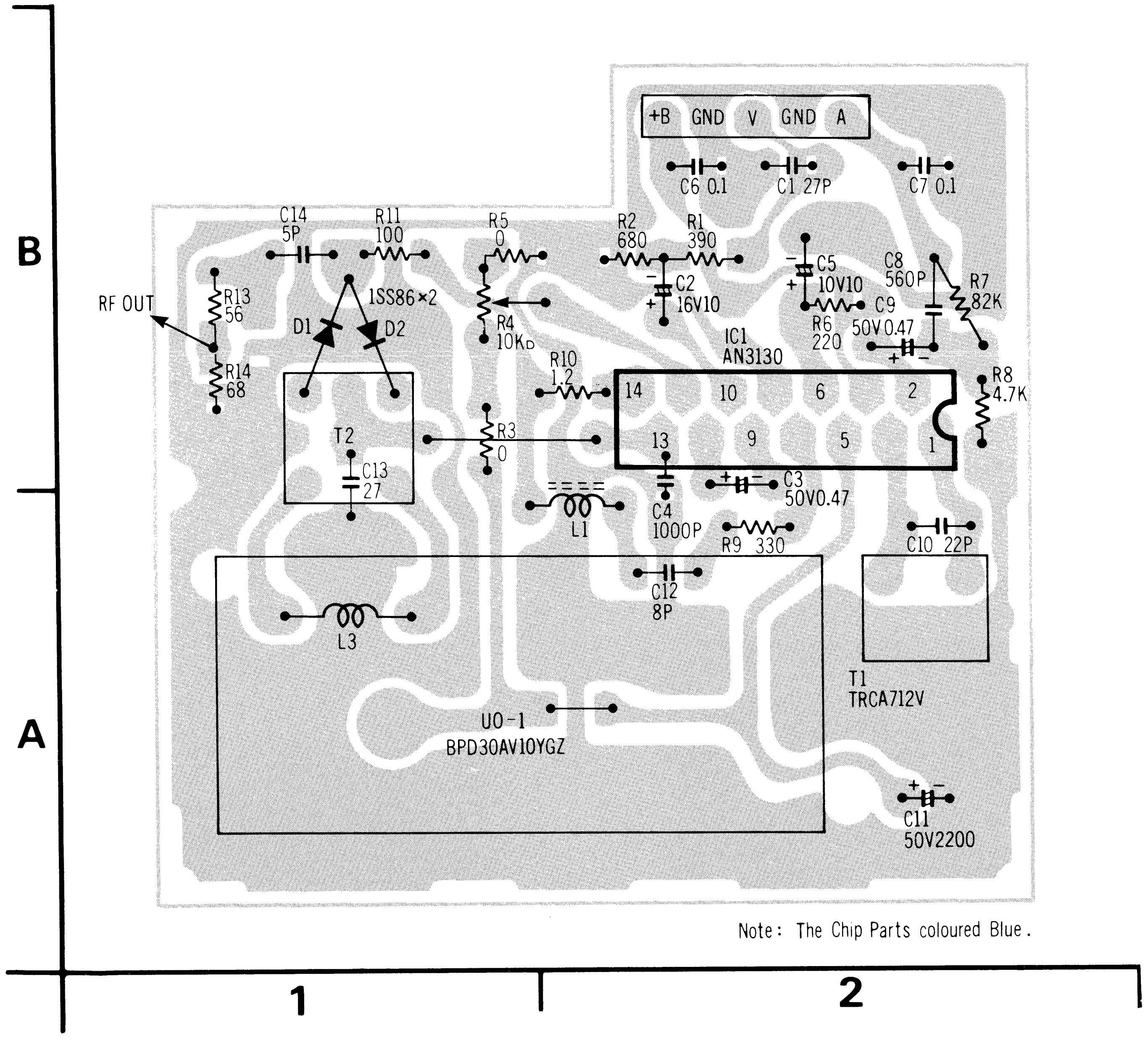

C
B
A
1
2
3
4
5
6
BURST LEVEL
TP714
Q705 2SA564A 2SB642
Q706 2SC945A 2SD637
X701 EFCS5R5MW3
P701
T704 VLT0312A EIVI0E301F 38.9MHz PEAK-1
T705 VLT0301 EIVI0E309A AFC DET
TP702
TP712
TP711
TP704
TP705
T703 EIM5A521 33.4MHz TRAP-1
IC703 BN5115
TP701
Q707 2SC945A 2SD637
D702 MA165 1SS53
T702 EULHLB318 VIF TUNNING COIL (VIDEO)
Q708 2SC1687
Q704 2SC1687
T701 EIM5A521 32.9MHz TRAP
TP703
T706 EULHLB319 VIF TUNNING COIL (AUDEO)
T712 EIM5A521 33.4MHz TRAP-2
IC705 AN5130
TP709
T707 VLT0312A 38.9MHz PEAK-2
TP708
TP706
TP707
Q709 2SD637 2SC1687 2SC945A
TUNER UNIT TNV7759F2
IF BM AFC BT BV BS AGC BU
TP713
D707 MA165 1SS133
P703
P7002
VHF AGC
UHF AGC
D704 MA165 1SS133
D701
D706 MA165 1SS133
Q703 2SC1685 2SD637 2SC945A
Q702 2SB641 2SA733 2SA564A
Q711 2SB641 2SA564A
Q710 2SA720
Q701 2SB641 2SA733 2SA564A
Q712 2SA545A 2SB642
IC701 μPC574JK
D708 2RD8.2EB2
D710 RD8.2EB2
D705 MA26WOB MA27WB
30V REG
P706
P702
VJB07156

RF CONVERTER SCHEMATIC DIAGRAM



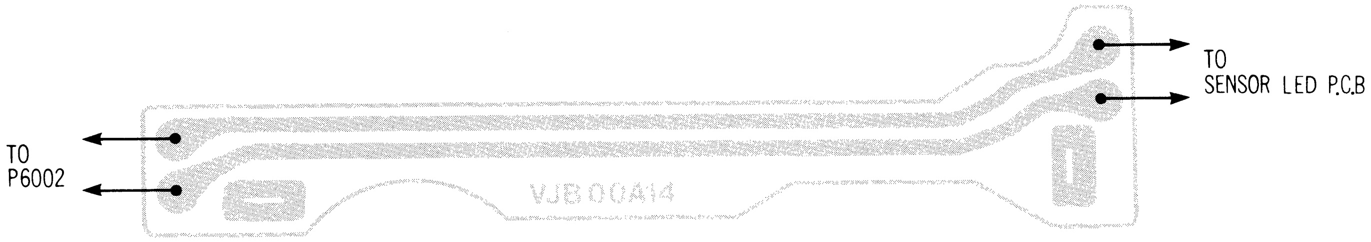
B
A
1
2
3
4
VIDEO IN ③
+B ①
AUDIO IN ⑤
GND ②
GND ④
R3 0
R4 10KB
R5 0
R1 390
C2 16V10
C1 27P
R2 680
C5 16V10
R6 220
C6 0.1
C8 560P
C9 50V0.47
C7 0.1
R7 82K
R8 4700
OFF SET
CLAMP
REG
REG
FM
IC 1
AN3130
C3 50V0.47
R9 330
C12 8P
L1 82μ
C11 50V2.2
C10 22P
T1 TRCA712V
R10 1200
R11 100
C14 5P
R12 220
R13 56
R14 68
RF OUT
C4 1000P
C13 27P
D1 1SS86
D2 1SS86
T2
C15 1000P
L3
U0-1
L2
L4
R15 8200
C16 100P
R16 8200
Q1 2SC1215R
R17 330
C17 1P
C18 14P
C19 POST 0.2P
C20 4P
C21 VC~7P

RF CONVERTER UNIT (ENC17571)

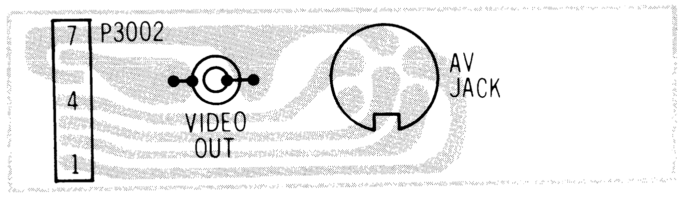

B
A
1
2
+B GND V GND A
C6 0.1
C1 27P
C7 0.1
C14 5P
R11 100
R5 0
R2 680
R1 390
C5 10V10
C8 560P
R7 82K
RF OUT
R13 56
1SS86×2
D1
D2
R4 10KΩ
C2 16V10
IC1 AN3130
R6 220
C9 50V0.47
R14 68
R10 1.2
14
10
6
2
R8 4.7K
T2
R3 0
13
9
5
1
C13 27
C3 50V0.47
L1
C4 1000P
R9 330
C10 22P
C12 8P
L3
T1 TRCA712V
U0-1 BPD30AV10YGZ
C11 50V2200

Note: The Chip Parts coloured Blue.

SENSOR LED CONNECTION P.C.B. (VJB00A14)


TO P6002
TO SENSOR LED P.C.B
VJB00A14

AV TERMINAL P.C.B. (VJB00A36)


7
4
1
P3002
VIDEO OUT
AV JACK

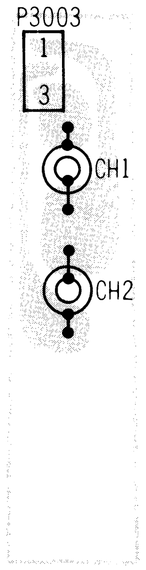
P3002

BP3002 - 3	1	VIDEO IN/OUT
BP3002 - 1	2	P.B. Ⓗ
P4507 - 3	3	AUDIO IN/OUT 2
P4507 - 1	4	AUDIO IN/OUT 1
BP3001 - 2	5	GND
BP3001 - 1	6	VIDEO OUT
BP3002 - 2	7	GND

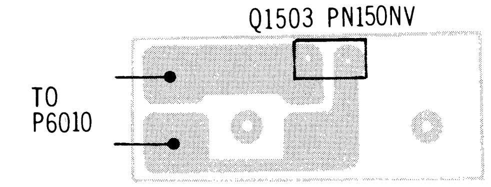
AUDIO LINE OUT P.C.B. (VJB00A37)

P3003

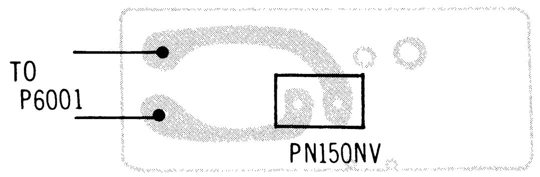
P4502 - 3	1	GND
P4502 - 2	2	CH2 OUT
P4502 - 1	3	CH1 OUT


P3003
1
3
CH1
CH2

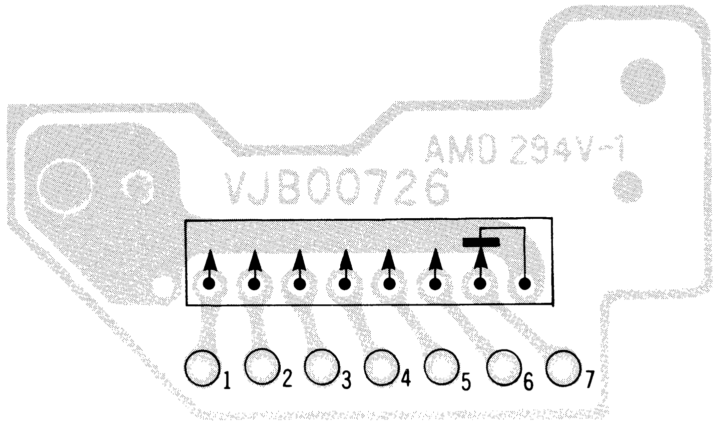
SUPPLY PHOTO TR P.C.B. (VJB00709)


Q1503 PN150NV
TO P6010

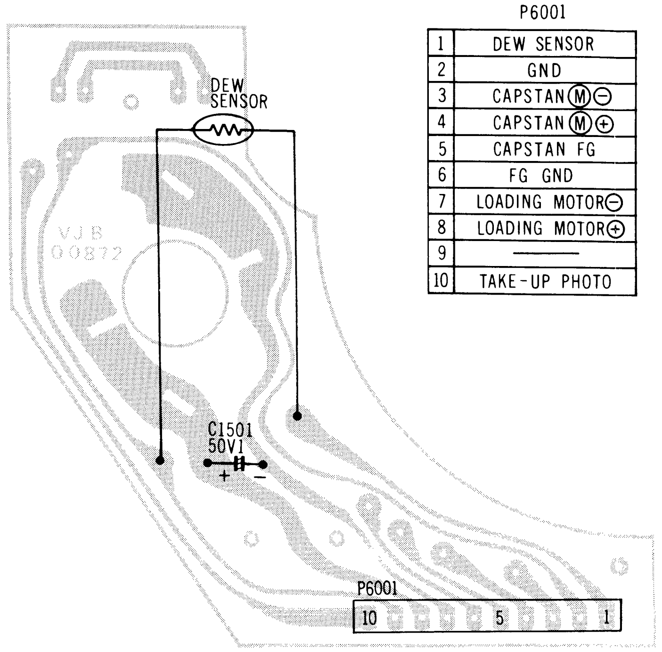
TAKE UP PHOTO TR P.C.B. (VJB00872)


TO P6001
PN150NV

MODE SELECT SW P.C.B. (VJB00726)


AM0 294V-1
VJB00726
1
2
3
4
5
6
7

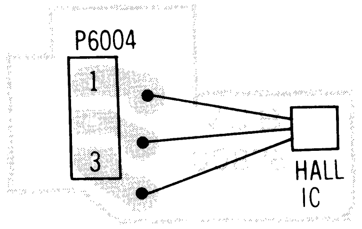
MOTOR CONNECTION P.C.B. (VJB00872)


DEW SENSOR
VJB 00872
C1501
50V1
P6001
10
5
1

P6001

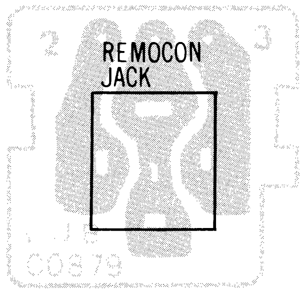
1	DEW SENSOR
2	GND
3	CAPSTAN Ⓜ⊖
4	CAPSTAN Ⓜ⊕
5	CAPSTAN FG
6	FG GND
7	LOADING MOTOR⊖
8	LOADING MOTOR⊕
9	————
10	TAKE-UP PHOTO

REEL SENSOR P.C.B. (VJB00876)


P6004
1
3
HALL
IC

REEL SENSOR	1	BP6006-3
GND	2	BP6006-2
+9V	3	BP6006-1

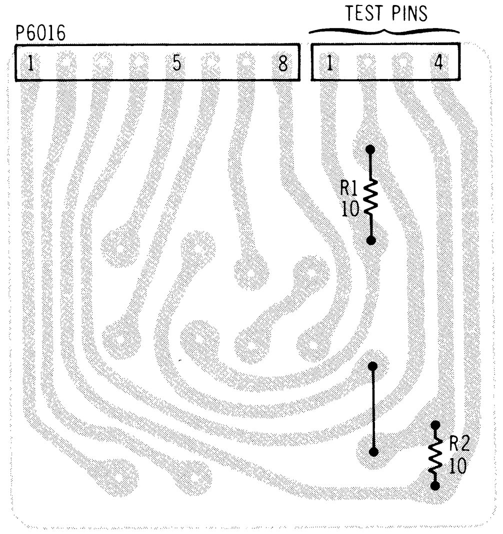
REMOTE CONTROL JACK P.C.B. (VJB00879)


2
3
REMOCON
JACK
00879

A/C, AE HEAD P.C.B. (VJB00996)

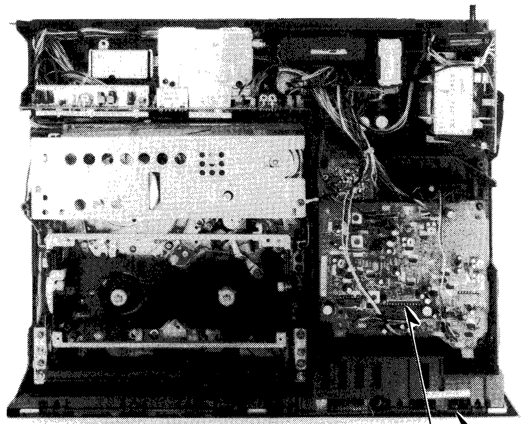
P6016

1	GND	P2001 - 1
2	CONTROL PULSE	P2001 - 1
3	AH-2 (W)	P4002 - 1
4	AH-1 (W)	P4001 - 1
5	AH-2 (R)	P4002 - 3
6	AH-1 (R)	P4001 - 3
7	AE HEAD	P6009 - 1
8	GND	P6009 - 2

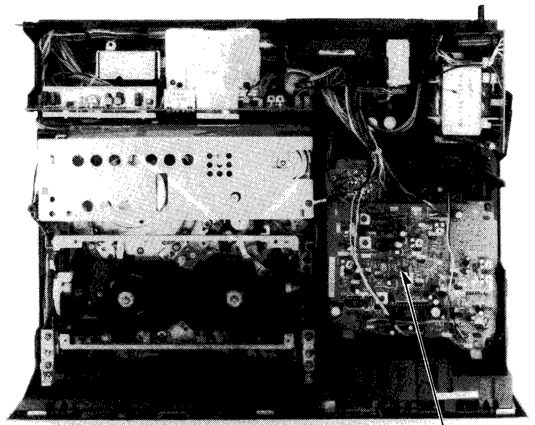

P6016
1
5
8
TEST PINS
1
4
R1
10
R2
10

CIRCUIT BOARD LAYOUT

TOP VIEW I

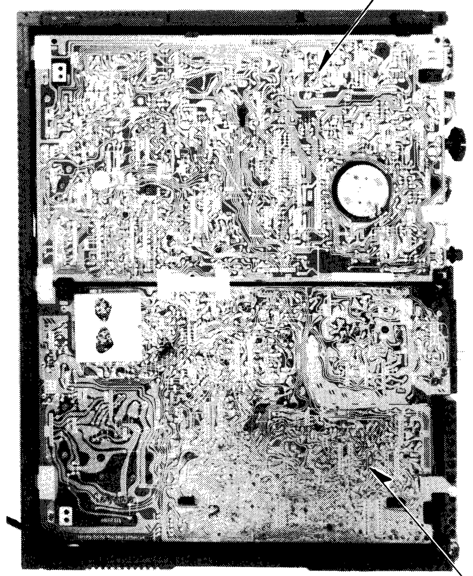

Decoder P.C.B. Unit
Timer & CH Select P.C.B. Unit

TOP VIEW II


Decoder P.C.B Unit

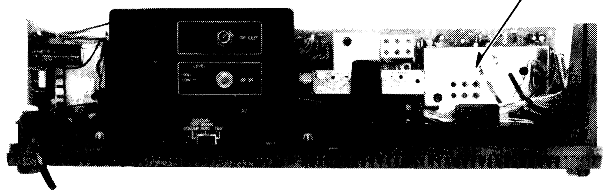
BOTTOM VIEW

Servo & System
Control P.C.B. Unit

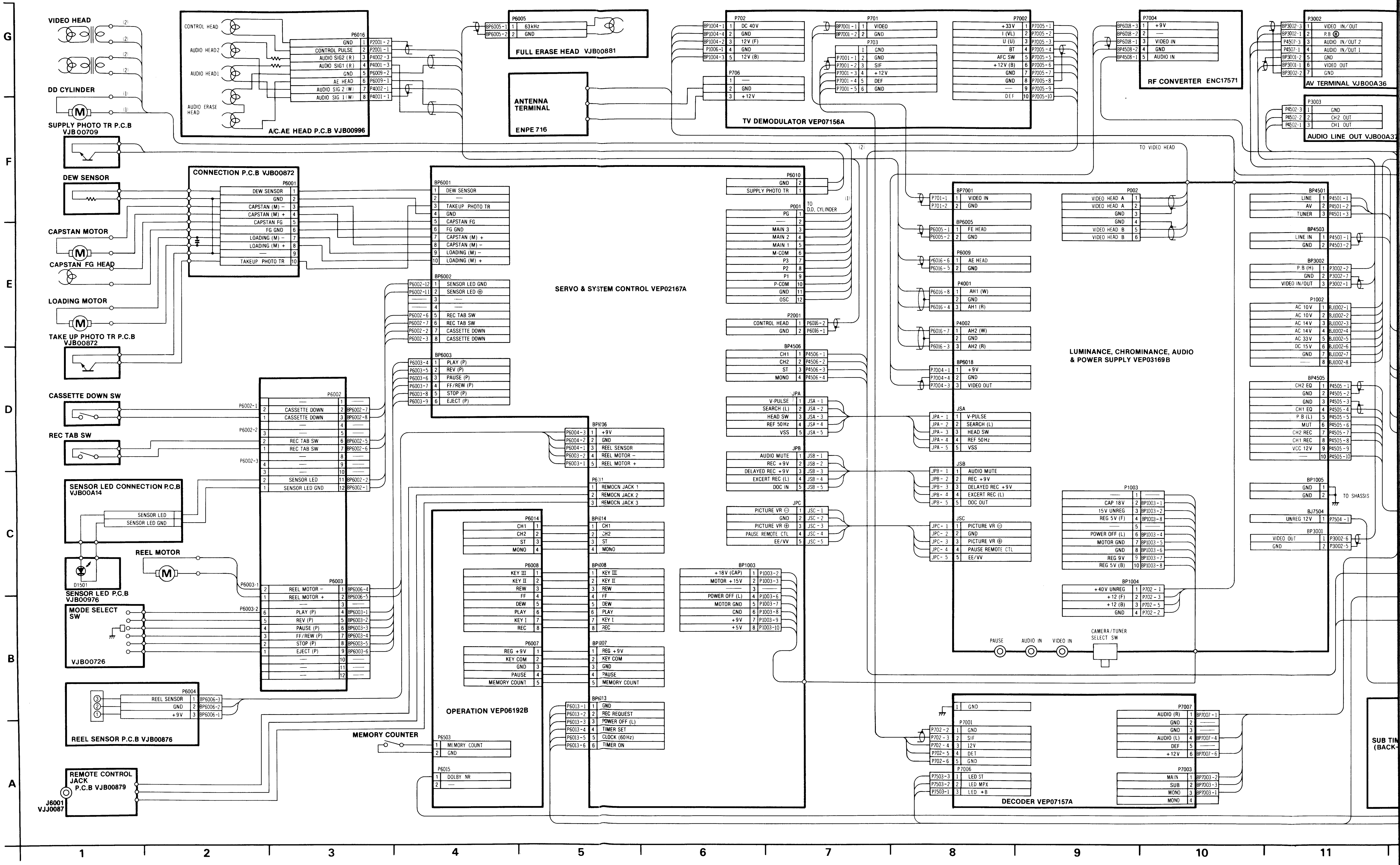

Luminance, Chrominance, Audio
& Power Supply P.C.B. Unit

REAR VIEW

TV Demodulator P.C.B Unit

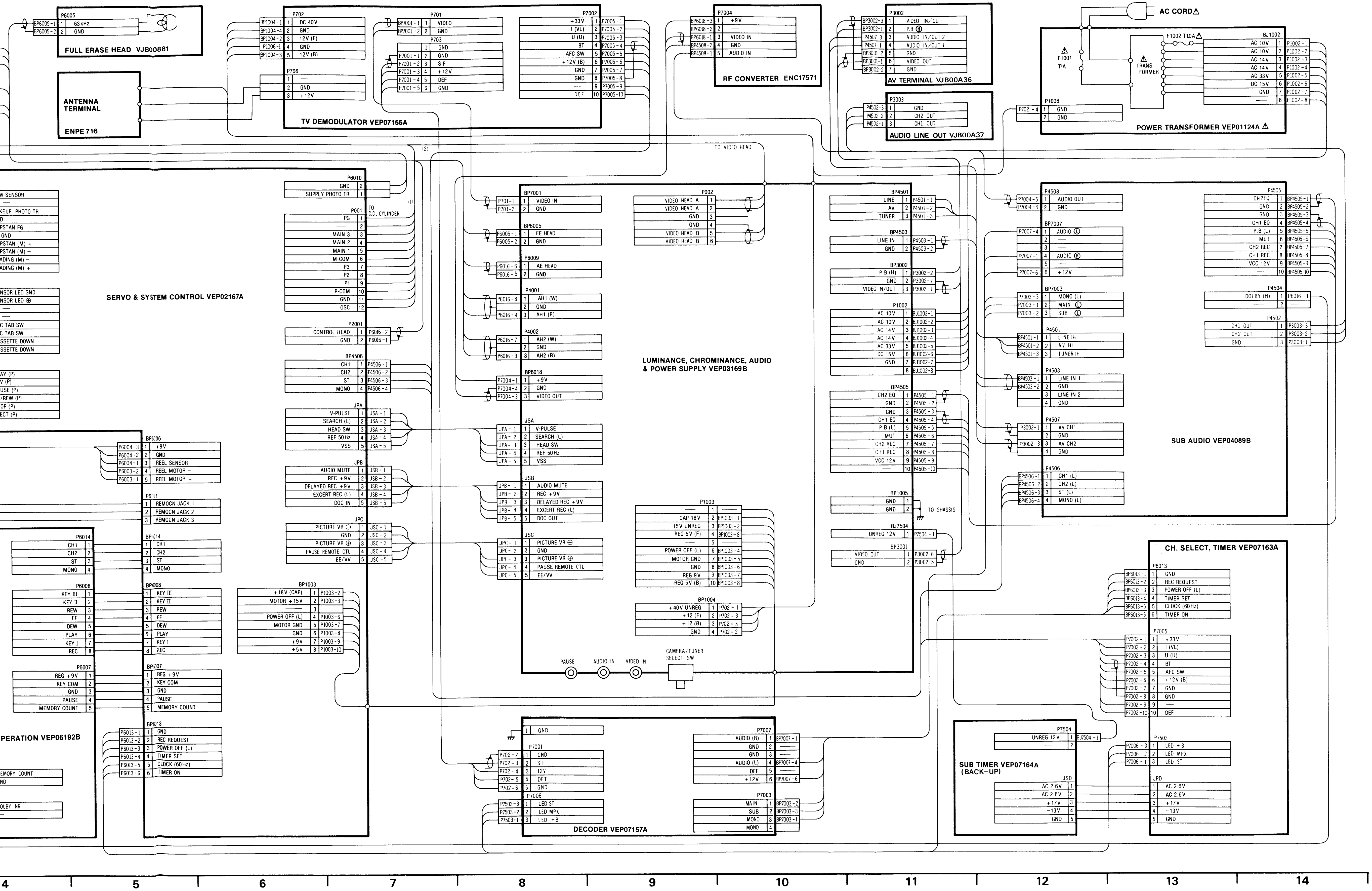


INTERCONNECTION SCHEMATIC DIAGRAM



G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
VIDEO HEAD
DD CYLINDER
SUPPLY PHOTO TR P.C.B VJB00709
DEW SENSOR
CAPSTAN MOTOR
CAPSTAN FG HEAD
LOADING MOTOR
TAKE UP PHOTO TR P.C.B VJB00872
CASSETTE DOWN SW
REC TAB SW
SENSOR LED CONNECTION P.C.B VJB00A14
REEL MOTOR
D1501
SENSOR LED P.C.B VJB00976
MODE SELECT SW
VJB00726
REEL SENSOR P.C.B VJB00876
REMOTE CONTROL JACK P.C.B VJB00879
J6001 VJJ0087
CONTROL HEAD
AUDIO HEAD2
AUDIO HEAD1
AUDIO ERASE HEAD
A/C.AE HEAD P.C.B VJB00996
P6016
P6005
63kHz
FULL ERASE HEAD VJB00881
ANTENNA TERMINAL
ENPE 716
CONNECTION P.C.B VJB00872
P6001
DEW SENSOR
CAPSTAN (M) −
CAPSTAN (M) +
CAPSTAN FG
FG GND
LOADING (M) −
LOADING (M) +
TAKEUP PHOTO TR
BP6001
BP6002
SENSOR LED GND
SENSOR LED ⊕
REC TAB SW
CASSETTE DOWN
BP6003
PLAY (P)
REV (P)
PAUSE (P)
FF/REW (P)
STOP (P)
EJECT (P)
P6002
P6003
REEL MOTOR −
REEL MOTOR +
P6004
REEL SENSOR
+9V
SERVO & SYSTEM CONTROL VEP02167A
BP6006
REEL SENSOR
BP6011
REMOCN JACK 1
REMOCN JACK 2
REMOCN JACK 3
P6014
BP6014
CH1
CH2
ST
MONO
P6008
BP6008
KEY Ⅲ
KEY Ⅱ
REW
FF
DEW
PLAY
KEY Ⅰ
REC
P6007
BP6007
REG +9V
KEY COM
GND
PAUSE
MEMORY COUNT
OPERATION VEP06192B
BP6013
REC REQUEST
POWER OFF (L)
TIMER SET
CLOCK (60Hz)
TIMER ON
MEMORY COUNTER
P6503
P6015
DOLBY NR
P6010
SUPPLY PHOTO TR
P001
TO D.D. CYLINDER
PG
MAIN 3
MAIN 2
MAIN 1
M-COM
P3
P2
P1
P-COM
OSC
P2001
CONTROL HEAD
BP4506
JPA
V-PULSE
SEARCH (L)
HEAD SW
REF 50Hz
VSS
JPB
AUDIO MUTE
REC +9V
DELAYED REC +9V
EXCERT REC (L)
DOC IN
JPC
PICTURE VR ⊖
PICTURE VR ⊕
PAUSE REMOTE CTL
EE/VV
BP1003
+18V (CAP)
MOTOR +15V
POWER OFF (L)
MOTOR GND
+9V
+5V
P702
DC 40V
12V (F)
12V (B)
P706
+12V
P701
VIDEO
P703
SIF
DEF
P7002
+33V
I (VL)
U (U)
BT
AFC SW
+12V (B)
TV DEMODULATOR VEP07156A
P7004
VIDEO IN
AUDIO IN
RF CONVERTER ENC17571
P3002
VIDEO IN/OUT
P.B Ⓡ
AUDIO IN/OUT 2
AUDIO IN/OUT 1
VIDEO OUT
AV TERMINAL VJB00A36
P3003
CH2 OUT
CH1 OUT
AUDIO LINE OUT VJB00A37
TO VIDEO HEAD
BP7001
BP6005
FE HEAD
BP6009
AE HEAD
P4001
AH1 (W)
AH1 (R)
P4002
AH2 (W)
AH2 (R)
BP6018
VIDEO OUT
P002
VIDEO HEAD A
VIDEO HEAD B
LUMINANCE, CHROMINANCE, AUDIO & POWER SUPPLY VEP03169B
JSA
JSB
JSC
P1003
CAP 18V
15V UNREG
REG 5V (F)
POWER OFF (L)
MOTOR GND
REG 9V
REG 5V (B)
BP1004
+40V UNREG
+12 (F)
+12 (B)
PAUSE
AUDIO IN
VIDEO IN
CAMERA/TUNER SELECT SW
BP4501
LINE
AV
TUNER
BP4503
LINE IN
BP3002
P.B (H)
P1002
AC 10V
AC 14V
AC 33V
DC 15V
BP4505
CH2 EQ
CH1 EQ
P.B (L)
MUT
CH2 REC
CH1 REC
VCC 12V
BP1005
TO SHASSIS
BJ7504
UNREG 12V
BP3001
P7001
DET
P7006
LED ST
LED MPX
LED +B
P7007
AUDIO (R)
AUDIO (L)
P7003
MAIN
SUB
MONO
DECODER VEP07157A
SUB TIM (BACK-

RAM


FULL ERASE HEAD VJB00881
P6005
63kHz
GND
ANTENNA TERMINAL
ENPE 716
TV DEMODULATOR VEP07156A
P702
DC 40V
GND
12V (F)
12V (B)
P706
+12V
P701
VIDEO
P703
SIF
DEF
P7002
+33V
I (VL)
U (U)
BT
AFC SW
+12V (B)
RF CONVERTER ENC17571
P7004
+9V
VIDEO IN
AUDIO IN
AV TERMINAL VJB00A36
P3002
VIDEO IN/OUT
P.B Ⓡ
AUDIO IN/OUT 2
AUDIO IN/OUT 1
VIDEO OUT
AUDIO LINE OUT VJB00A37
P3003
CH2 OUT
CH1 OUT
AC CORD⚠
F1001 T1A
F1002 T1DA⚠
TRANS FORMER
POWER TRANSFORMER VEP01124A ⚠
BJ1002
AC 10V
AC 14V
AC 33V
DC 15V
P1006
TO VIDEO HEAD
SERVO & SYSTEM CONTROL VEP02167A
P6010
SUPPLY PHOTO TR
P001
TO D.D. CYLINDER
PG
MAIN 3
MAIN 2
MAIN 1
M-COM
P3
P2
P1
P-COM
OSC
P2001
CONTROL HEAD
BP4506
CH1
CH2
ST
MONO
JPA
V-PULSE
SEARCH (L)
HEAD SW
REF 50Hz
VSS
JPB
AUDIO MUTE
REC +9V
DELAYED REC +9V
EXCERT REC (L)
DOC IN
JPC
PICTURE VR ⊖
PICTURE VR ⊕
PAUSE REMOTE CTL
EE/VV
BP1003
+18V (CAP)
MOTOR +15V
POWER OFF (L)
MOTOR GND
+5V
BP6006
REEL SENSOR
REEL MOTOR −
REEL MOTOR +
P6021
REMOCN JACK 1
REMOCN JACK 2
REMOCN JACK 3
P6014
P6008
KEY III
KEY II
REW
FF
DEW
PLAY
KEY I
REC
P6007
REG +9V
KEY COM
PAUSE
MEMORY COUNT
BP6013
REC REQUEST
TIMER SET
CLOCK (60Hz)
TIMER ON
PERATION VEP06192B
LUMINANCE, CHROMINANCE, AUDIO & POWER SUPPLY VEP03169B
BP7001
VIDEO IN
BP6005
FE HEAD
P6009
AE HEAD
P4001
AH1 (W)
AH1 (R)
P4002
AH2 (W)
AH2 (R)
BP6018
VIDEO OUT
P002
VIDEO HEAD A
VIDEO HEAD B
P1003
CAP 18V
15V UNREG
REG 5V (F)
REG 9V
REG 5V (B)
BP1004
+40V UNREG
+12 (F)
+12 (B)
PAUSE
AUDIO IN
VIDEO IN
CAMERA/TUNER SELECT SW
BP4501
LINE
AV
TUNER
BP4503
LINE IN
BP3002
P.B (H)
VIDEO IN/OUT
P1002
BP4505
CH2 EQ
CH1 EQ
P.B (L)
MUT
CH2 REC
CH1 REC
VCC 12V
BP1005
TO SHASSIS
BJ7504
UNREG 12V
BP3001
SUB AUDIO VEP04089B
P4508
AUDIO OUT
BP7007
AUDIO Ⓛ
AUDIO Ⓡ
BP7003
MONO (L)
MAIN Ⓛ
SUB Ⓛ
P4501
LINE (H)
AV (H)
TUNER (H)
P4503
LINE IN 1
LINE IN 2
P4507
AV CH1
AV CH2
P4506
CH1 (L)
CH2 (L)
ST (L)
MONO (L)
P4505
CH2EQ
P4504
DOLBY (H)
P4502
CH. SELECT, TIMER VEP07163A
P6013
P7005
LED MPX
LED ST
LED +B
JPD
AC 2.6V
+17V
−13V
SUB TIMER VEP07164A (BACK-UP)
P7504
JSD
DECODER VEP07157A
P7001
12V
DET
P7006
P7007
AUDIO (R)
AUDIO (L)
P7003
MAIN
SUB
MONO
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ORDER NO. VRD-8301-354

Service Manual

Video Cassette Recorder

Panasonic VHS

NV-332-EG

Vol. 4

Exploded View
Replacement Parts List

SPECIFICATIONS

Power Source: 220V AC 50/60Hz
Power Consumption: Approx. 36 watts
Television System: CCIR: 625 lines, 50 fields
PAL/DDR SECAM colour signal
Video Recording System: 2 rotary heads, helical scanning system
Luminance: FM azimuth recording
Colour signal: converted subscarrier phase shift recording
Audio Track: 1 track
Tape Format: Tape width 12.7mm high density tape
Tape Speed: 23.39mm/s
Record/Playback Time: 240 min. with NV-E240
FF/REW Time: Less than 6.5 min. with NV-E240
Heads: Video: 2 rotary heads
Audio/Control: 1 stationary head
Erase: 1 full track erase
Input Level: Video: VIDEO IN connector (BNC)
1.0Vp-p, 75Ω terminate
AV (ADIN45482)
1.0Vp-p, 75Ω terminated
Audio: LINE IN jack (RCA)
More than −20dB, more than 50kΩ (Monaral)
AV (DIN45482)
more than −10dB, more than 10kΩ

Output Level: Video: VIDEO OUT connector (BNC)
1.0Vp-p, 75Ω terminate
AV (DIN45482)
1.0Vp-p, 75Ω terminate
Audio: LINE OUT jack (RCA)
−6dB, less than 1kΩ
AV (DIN45482)
−6dB, less than 1kΩ
RF Modulated: UHF channel 36 ± 4CH
75Ω terminate
Weight: 8.6kg
Dimensions: 430(W) × 125(H) × 358(D)mm
Accessory Supplied: 1 pc. DIN-RF Cable VJA0130
Optional Accessories: Video cassette tape:
NV-E240 Approx. 344m, 240 min.
NV-E180 Approx. 258m, 180 min.
NV-E120 Approx. 174m, 120 min.
NV-E60 Approx. 88m, 60 min.
Wired Remote Control Unit, NV-A33
Video Camera, WV-2600E, WV-3000E, WV-3200E

Weight and dimensions shown are apparoximate.
Specifications are subject to change without notice.

Panasonic

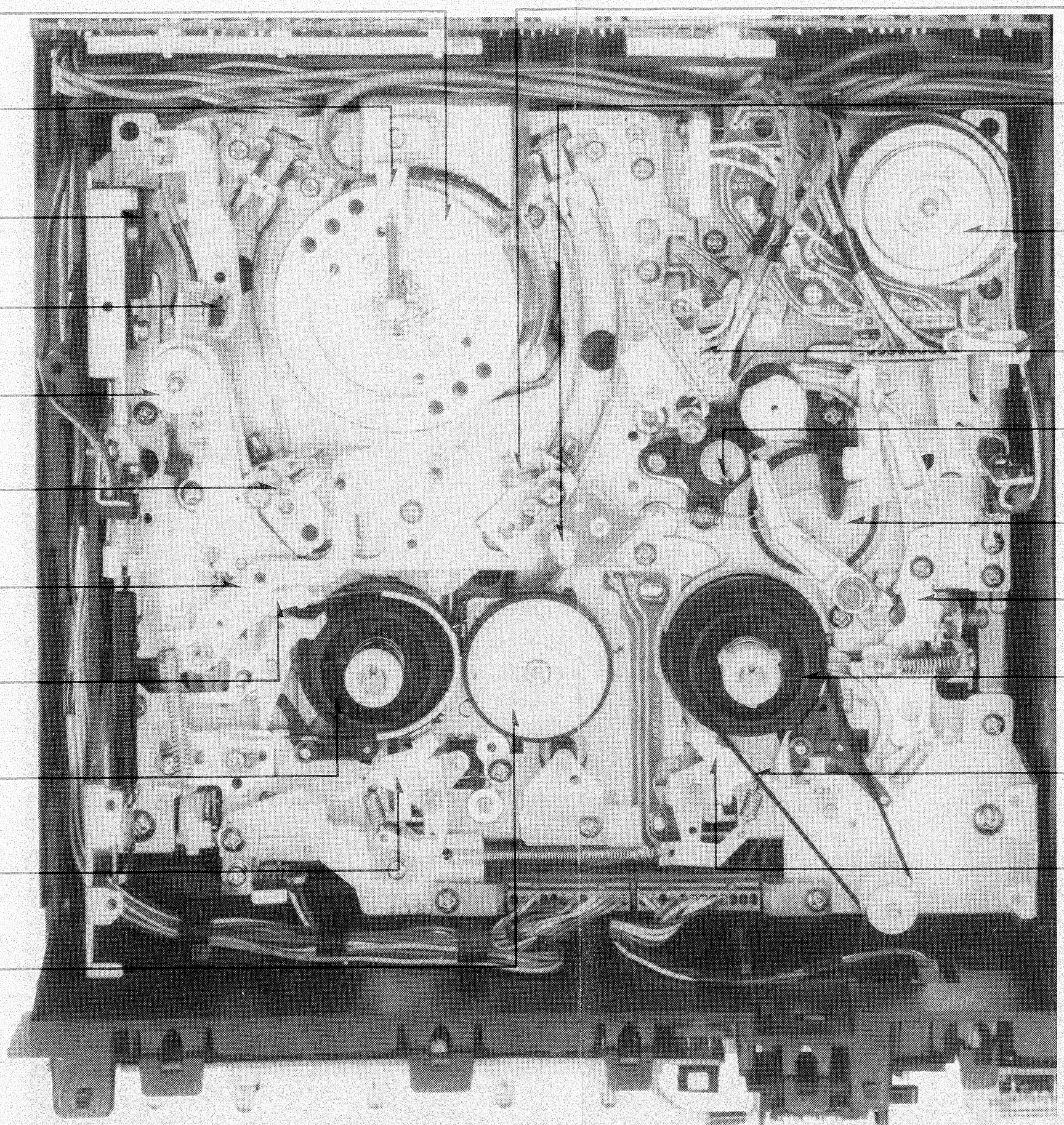
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

CONTENTS

SPECIFICATIONS .... Cover
INNER PARTS LOCATION .... 4 - 1
  TOP VIEW .... 4 - 1
  BOTTOM VIEW .... 4 - 2
EXPLODED VIEW .... 4 - 3
  1. TRANSPORT SECTION .... 4 - 3
  2. MOVING MECHANISM SECTION - (1) .... 4 - 4
  3. MOVING MECHAMISM SECTION - (2) .... 4 - 5
  4. CASSETTE LOADING MECHANISM SECTION .... 4 - 6
  5. CASING PARTS SECTION .... 4 - 7
  6. PACKING PARTS & ACCESSORIES SECTION .... 4 - 8
MECHANICAL REPLACEMENT PARTS LIST .... 4 - 9
ELECTRICAL REPLACEMENT PARTS LIST .... 4 -12

INNER PARTS LOCATION

TOP VIEW



Upper Cylinder Unit (VEH0103)

Didcharge Angle Unit (VXA1584)

Damper Unit (VDG0100)

Erase Head (VBS0023)

Supply Roller (VDP0759)

Inclined Base [S] Unit (VXA1191)

Tension Arm Unit (VXL0974)

Tension Band Unit (VXZ0129)

Supply Reel Table Unit (VXR0112)

Brake Arm [L] Unit (VXL0868)

Idler Unit (VXP0463)

Inclined Base [B] Unit (VXA1084)

Sensor LED (GL450)

Capstan Motor (MXA13V9LC)

A/C Head (VBR0066)

Capstan Holder Unit (VXD0072)

Play Idler Unit (VXP0488)

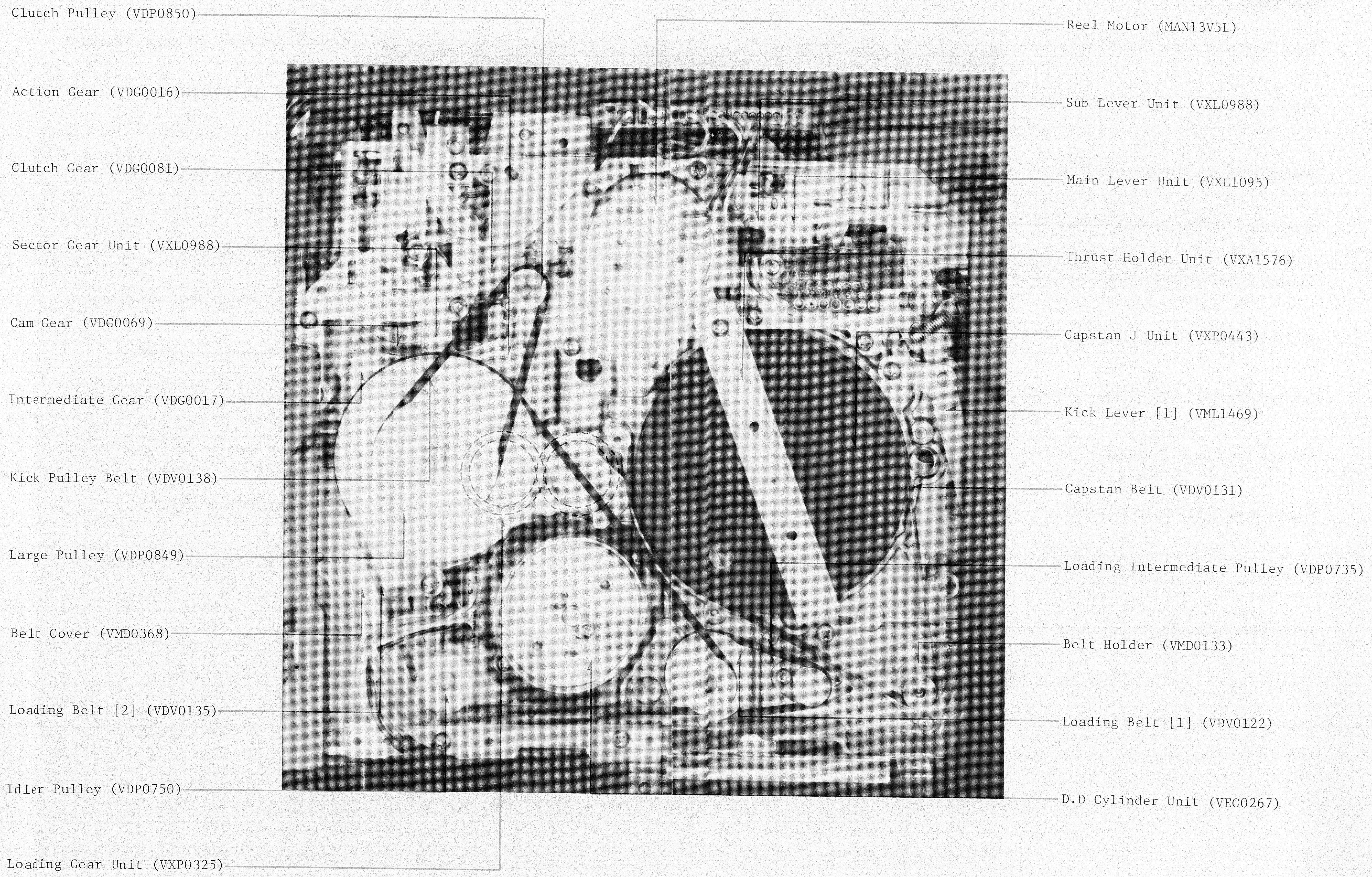
Pressure Roller Unit (VXP0490)

Take-up Reel Table Unit (VXR0079)

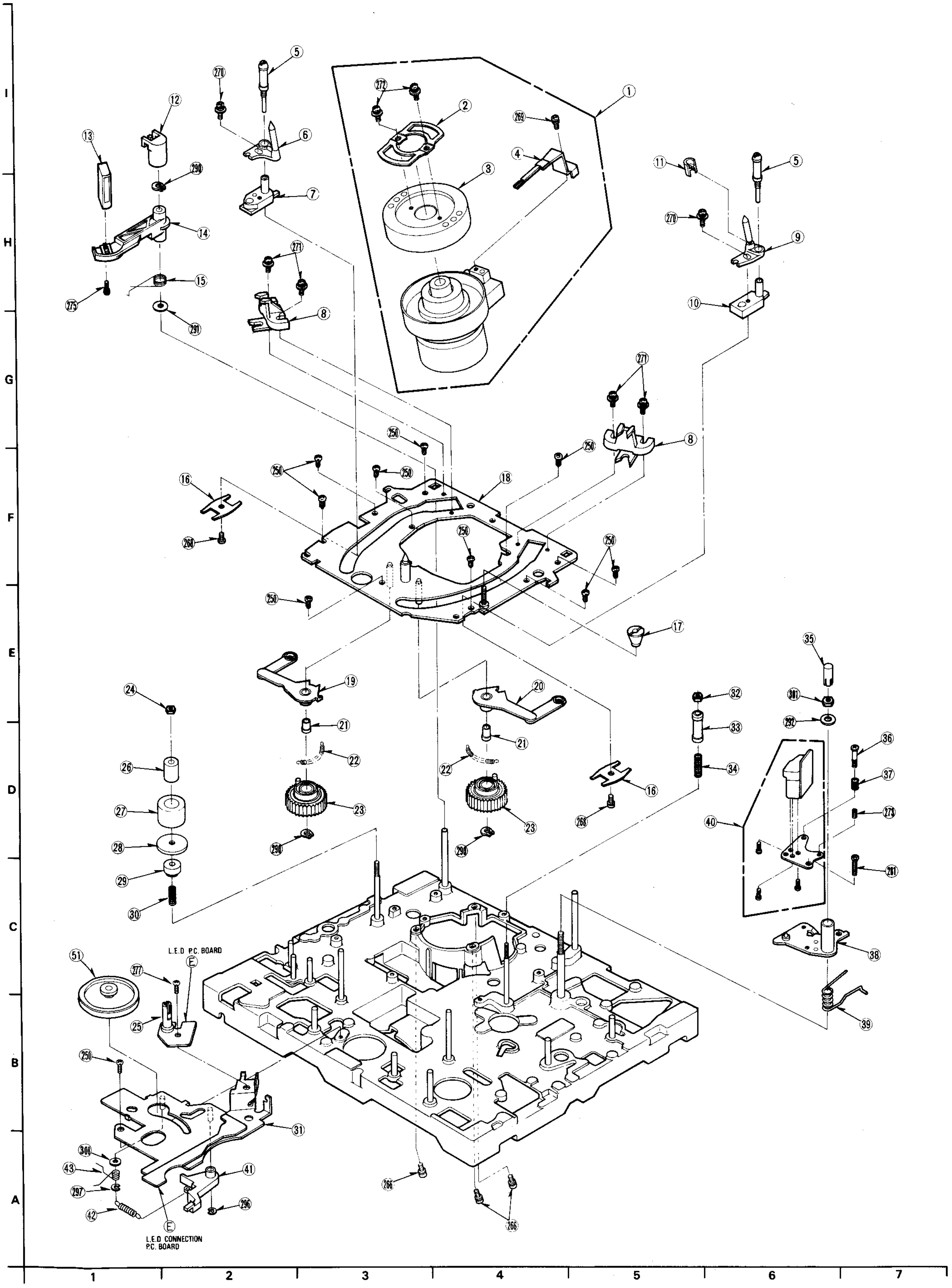
Counter Belt (VDV0143)

Brake Arm [R] Unit (VXL0867)

BOTTOM VIEW


Clutch Pulley (VDP0850)
Action Gear (VDG0016)
Clutch Gear (VDG0081)
Sector Gear Unit (VXL0988)
Cam Gear (VDG0069)
Intermediate Gear (VDG0017)
Kick Pulley Belt (VDV0138)
Large Pulley (VDP0849)
Belt Cover (VMD0368)
Loading Belt [2] (VDV0135)
Idler Pulley (VDP0750)
Loading Gear Unit (VXP0325)
Reel Motor (MAN13V5L)
Sub Lever Unit (VXL0988)
Main Lever Unit (VXL1095)
Thrust Holder Unit (VXA1576)
Capstan J Unit (VXP0443)
Kick Lever [1] (VML1469)
Capstan Belt (VDV0131)
Loading Intermediate Pulley (VDP0735)
Belt Holder (VMD0133)
Loading Belt [1] (VDV0122)
D.D Cylinder Unit (VEG0267)

EXPLODED VIEWS ❶ *Transport Section*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L.E.D CONNECTION
P.C. BOARD
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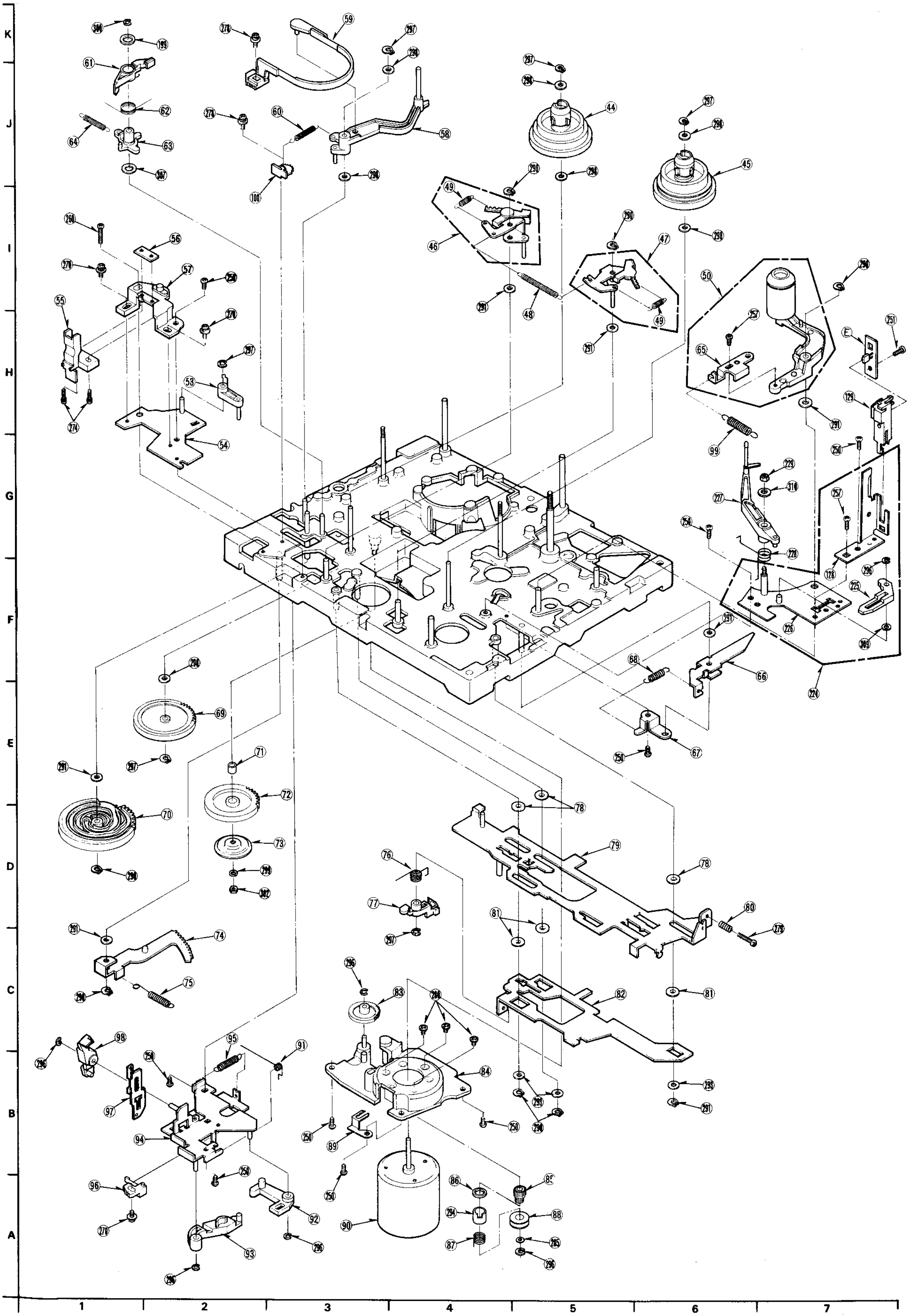
❷ *Moving Mechanism Section-(1)*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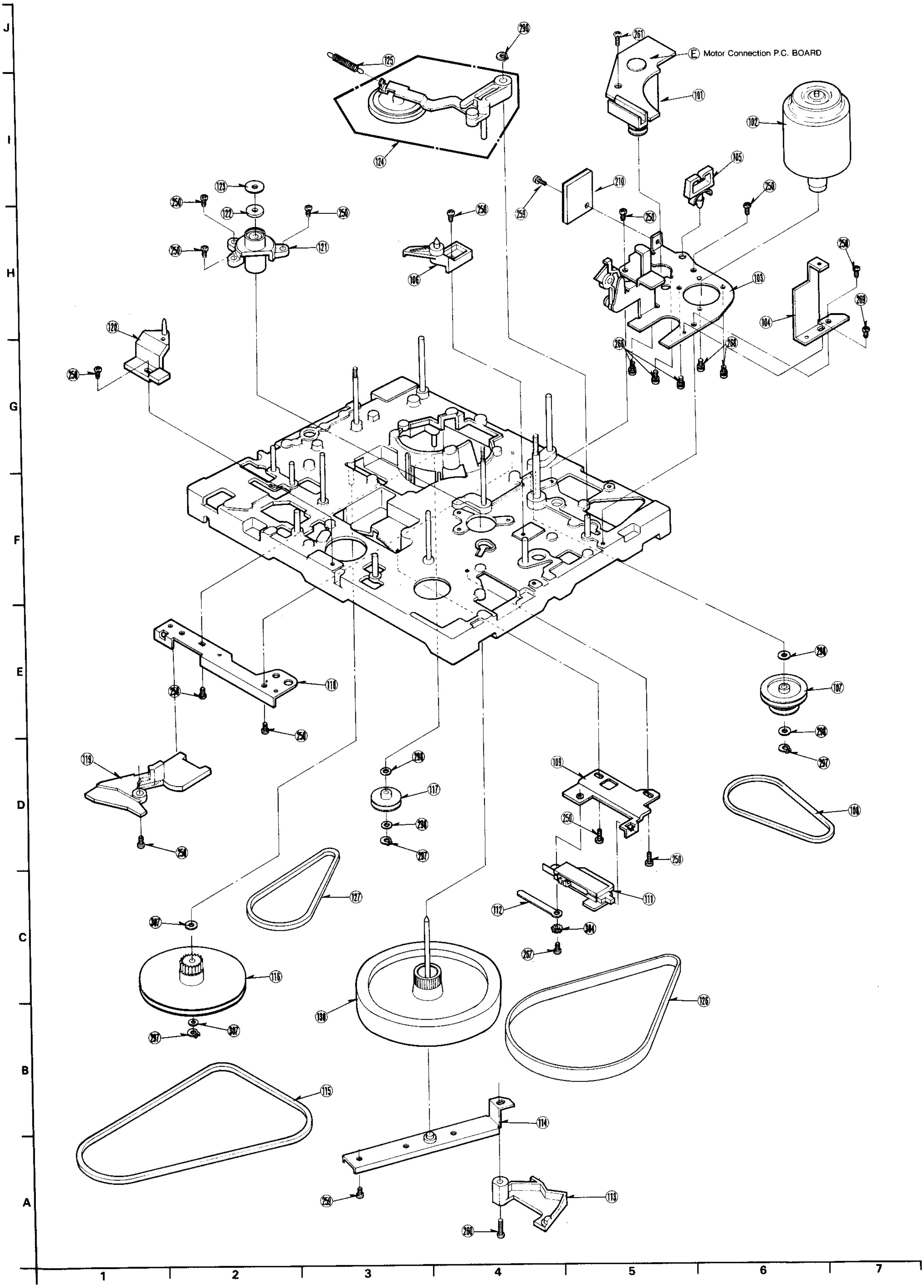
❸ Moving Mechanism Section-(2)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Ⓔ Motor Connection P.C. BOARD
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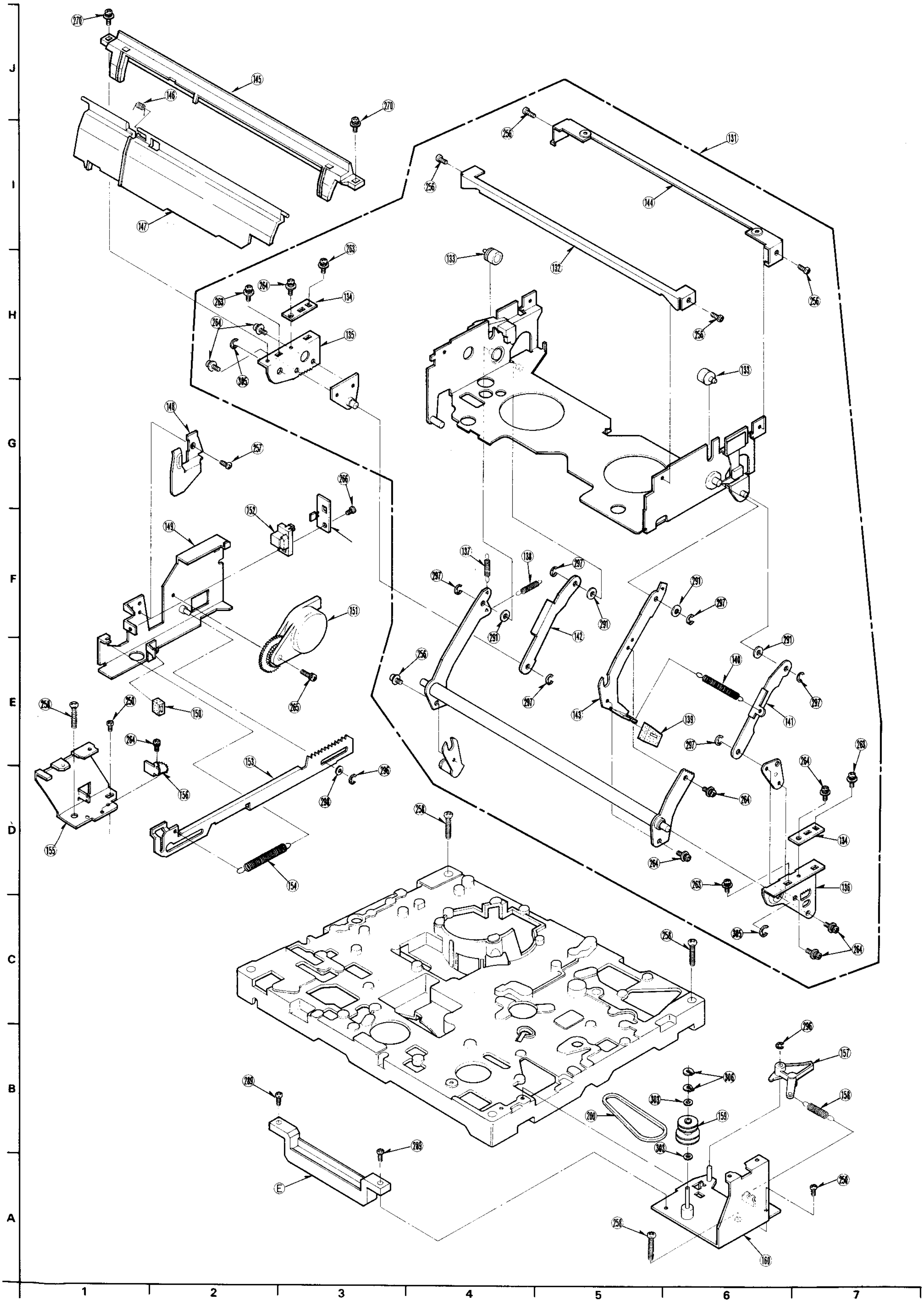
❹ *Cassette Loading Mechanism Section*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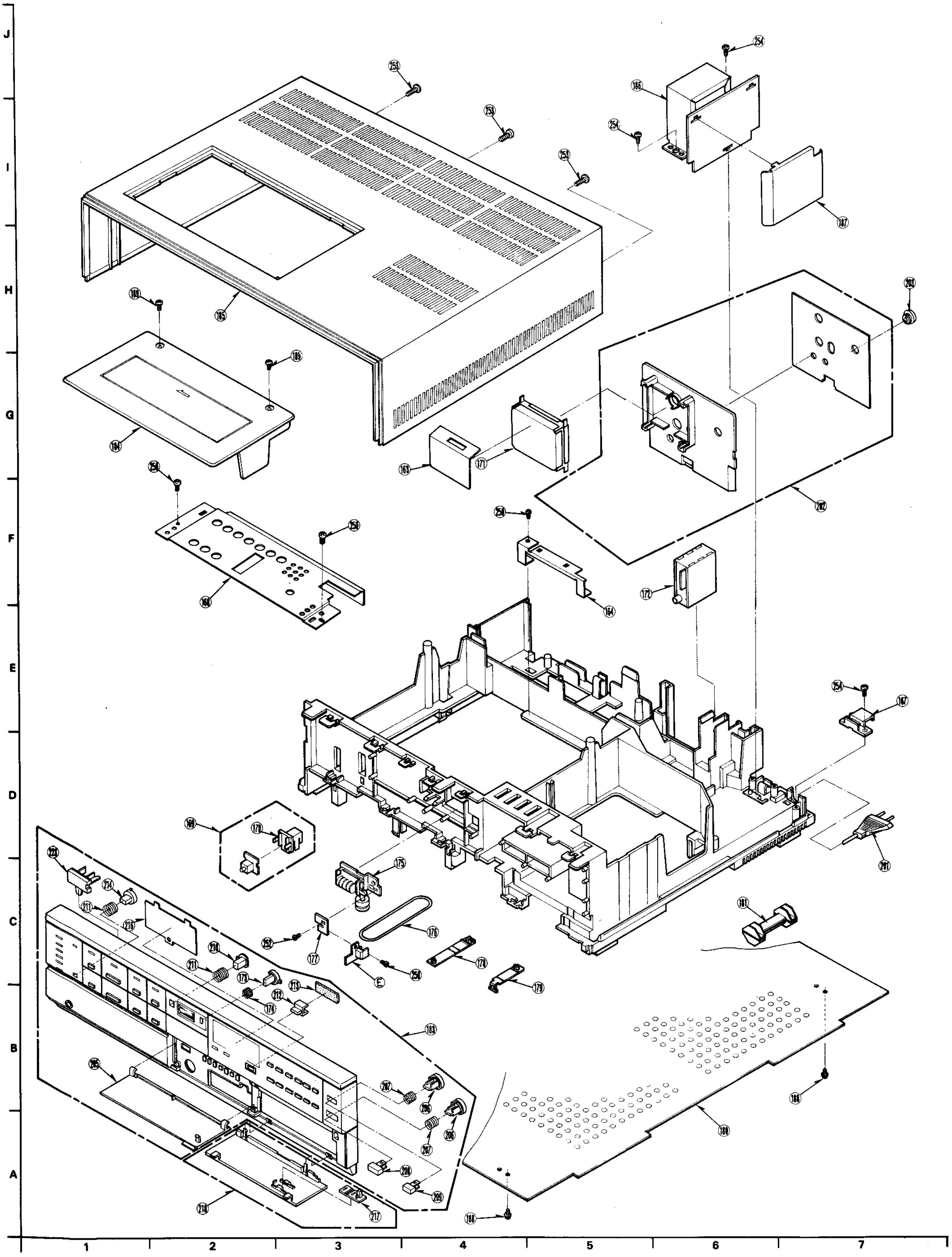
❺ *Casing Parts Section*



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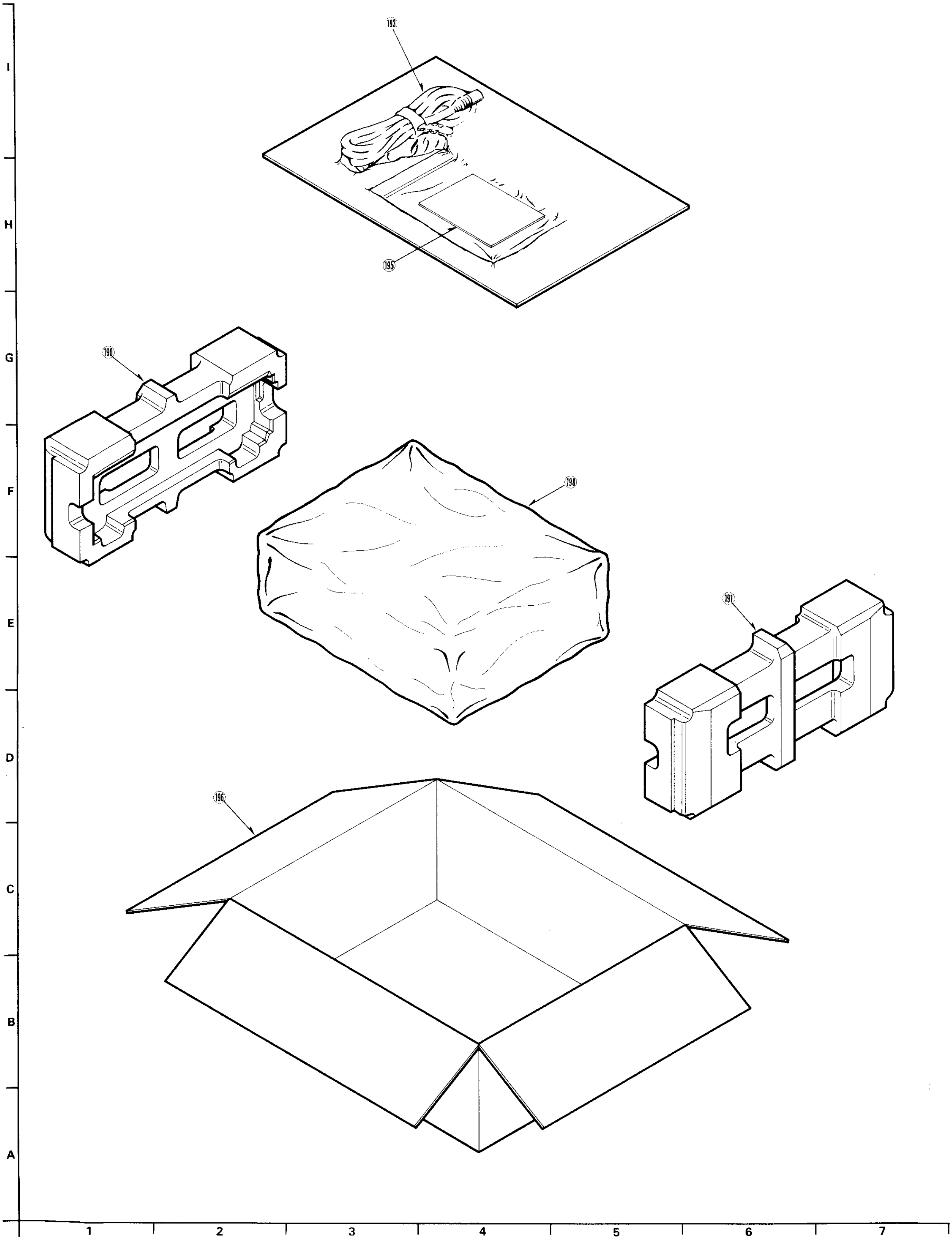
⑥ Casing Parts Section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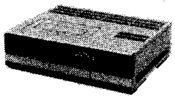
MECHANICAL REPLACEMENT PARTS LIST

Model No. NV-332-EG

Notes:
1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified by ⚠ have special characteristics important for safety.
When replacing any of these components, use only the original ones.



Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
1(1)		VEG0208	DD Cylinder Unit	1	
2(1)		VMA3165	Wire Cover	1	
3(1)		VEH0103	Upper Cylinder Unit	1	
4(1)		VXA1584	Discharge Angle Unit	1	
5(1)		VXP0431	Roller Post Unit	2	
6(1)		VXA1191	Inclind Base (S) Unit	1	
7(1)		VXA1189	Shaft Holder (S) Unit	1	
8(1)		VMD0100	Post Stopper	2	
9(1)		VXA1084	Inclind Base (B) Unit	1	
10(1)		VXA1190	Shaft Holder (T) Unit	1	
11(1)		VMX0301	Guide Snap	1	
12(1)		VMD0369	Wire Holder	1	
13(1)		VBS0023	Erase Head	1	
14(1)		VML1370	Erase Head Lever	1	
15(1)		VMB1005	Erase Head Lever Spring	1	
16(1)		VMA4436	Shaft Holder Spring	2	
17(1)		VHN0014	"X" Adjust Nut	1	
18(1)		VXA1567	Loading Base 1 Unit	1	
19(1)		VXL0753	Loading Arm (L) Unit	1	
20(1)		VXL0754	Loading Arm (R) Unit	1	
21(1)		VMX0257	Arm Sleeve	2	
22(1)		VMB0669	Loading Spring	2	
23(1)		VXP0325	Loading Gear Unit	2	
24(1)		VHD0045	Nylon Nut	1	
25(1)		VMD0465	LED Holder	1	
26(1)		VMX0288	Collar	1	
27(1)		VDP0759	Supply Roller	1	
28(1)		VMX0456	Limiter (S)	1	
29(1)		VMX0457	Under Limiter	1	
30(1)		VMB0754	Supply Limiter Spring	1	
31(1)		VXA1825	Idler Base 1 Unit	1	
32(1)		XNG3BS	M3 Nut	1	
33(1)		VMX0280	Post Sleeve	1	
34(1)		VMB0699	P4 Spring	1	
35(1)		VMX0256	Stopper Snap	1	
36(1)		VHD0054	Adjust Screw	1	
37(1)		VMB0404	Adjust Spring	1	
38(1)		VXA1571	Head Base B Unit	1	
39(1)		VMB0997	A/C Head Height Spring	1	
40(1)		VBR0066	A/C Head	1	
41(1)		VML1433	Idler Stopper Lever	1	
42(1)		VMB0882	Idler Stopper Spring	1	
43(1)		VMB1083	Idler Pressure Spring	1	
44(2)		VXR0112	Supply Reel Table Unit	1	
45(2)		VXR0079	Take-Up Reel Table Unit	1	
46(2)		VXL0868	Brake Arm (L) Unit	1	
47(2)		VXL0867	Brake Arm (R) Unit	1	
48(2)		VMB0661	Brake Arm Spring	1	
49(2)		VMB0660	Brake Lever Spring	2	
50(2)		VXP0485	Pressure Roller Unit	1	
51(2)		VXP0463	Idler Unit	1	
53(2)		VXL0875	S Brake Release Unit	1	
54(2)		VXA1574	Brake Release Base Unit	1	
55(2)		VSM0043	Safety Tab Switch	1	
56(2)		VMA5372	Nut Plate	1	
57(2)		VMA5826	Cassette Holder Angle	1	
58(2)		VXL0974	Tension Arm Unit	1	
59(2)		VXZ0129	Tension Band Unit	1	
60(2)		VMB1004	Tension Spring	1	
61(2)		VXZ0110	Soft Brake Arm Unit	1	
62(2)		VMB0710	Soft Brake Spring A	1	
63(2)		VML1372	Soft Brake Lever A	1	
64(2)		VMB1024	Soft Brake Spring	1	
65(2)		VMA6204	Spring Hook	1	
66(2)		VML1469	Kick Lever 1	1	
67(2)		VMA6212	Lever Holder	1	
68(2)		VMB0999	Kick Lever Spring 1	1	
69(2)		VDG0017	Intermediate Gear	1	
70(2)		VDG0069	Cam Gear	1	
71(2)		VMX0268	Action Gear Sleeve	1	
72(2)		VDG0016	Action Gear	1	
73(2)		VMA4088	Holder	1	
74(2)		VXL0988	Sector Gear Unit	1	
75(2)		VMB1002	Sub Rod Spring	1	
76(2)		VMB0890	Kick Lever Spring 2	1	
77(2)		VML1273	Kick Lever 2	1	
78(2)		VMX0122	Slide Washer	3	
79(2)		VXL1095	Main Lever Unit	1	
80(2)		VMB0680	Adjust Spring	1	
81(2)		VMX0471	Slide Washer	3	
82(2)		VXL0988	Sub Lever Unit	1	
83(2)		VDG0080	Kick Gear	1	
84(2)		VXA1581	Reel Motor Bracket 1 Unit	1	
85(2)		VDG0081	Clutch Gear	1	
86(2)		VMX0405	Clutch Collar	1	
87(2)		VMB0897	Clutch Spring	1	
88(2)		VDP0850	Clutch Pulley	1	
89(2)		VMA4739	Earth Angle	1	
90(2)		MAN13V5L	Reel Motor	1	
91(2)		VMB0673	Stopper Spring	1	
92(2)		VML1278	Eject Lever (B)	1	
93(2)		VML1277	Eject Lever (A)	1	
94(2)		VXA1612	Lock Base 1 Unit	1	
95(2)		VMB0731	Eject Spring	1	
96(2)		VSH0013	Leaf Switch	1	
97(2)		VML1276	Lock Slide Lever	1	
98(2)		VML1103	Lock Lever	1	
99(2)		VDM1001	Pressure Spring	1	
100(2)		VMA5813	Adjust Hook	1	
101(3)		VEM0135	Loading Motor	1	
102(3)		MAX13V9LC	Capstan Motor	1	
103(3)		VXA1572	Motor Bracket 1 Unit	1	
104(3)		VMA5951	Shield Case Bracket	1	
105(3)		VJF0035	Clip	1	
106(3)		VMD0502	Place Fix Bracket	1	
107(3)		VDP0735	Loading Intermediate Pulley	1	
108(3)		VDV0122	Loading Belt (1)	1	
109(3)		VMA6126	Mode Select Switch Angle	1	
111(3)		VSS0060	Mode Select Switch	1	
112(3)		VJR3	Clamper	1	
113(3)		VMD0133	Belt Holder	1	
114(3)		VXA1576	Thrust Holder Unit	1	
115(3)		VDV0135	Loading Belt (2)	1	
116(3)		VDP0849	Large Pulley	1	
117(3)		VDP0750	Idler Pulley	1	
118(3)		VMA5816	Chassis Bracket (A)	1	
119(3)		VMD0368	Belt Cover	1	
120(3)		VMD0370	Brake Release Lever	1	
121(3)		VXD0072	Capstan Holder Unit	1	
122(3)		VMD0104	Oil Pool	1	
123(3)		VMX0251	Oil Seal	1	
124(3)		VXP0488	Play Idler Unit	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
125(3)		VMB1003	Play Idler Spring	1	
126(3)		VDV0131	Capstan Belt	1	
127(3)		VDV0138	Kick Pulley Belt	1	
128(3)		VMA6211	Transistor Holder Angle	1	
			(R)		
129(3)		VMD0373	Transistor Holder (R)	1	
130(3)		VXP0443	Capstan J Unit	1	
131(4)		VXA1753	Cassette Up Unit	1	
132(4)		VMA4387	Cassette Compartment	1	
			Support Angle (F)		
133(4)		VDP0874	Roller	2	
134(4)		VMA3990	Holder Adjustment Plate	2	
135(4)		VMA4003	Holder Angle (L)	1	
136(4)		VMA4002	Holder Angle (R)	1	
137(4)		VMB0734	Lever Spring	1	
138(4)		VMB1008	Cassette Holder Spring	1	
139(4)		VMG0215	Cushion	1	
140(4)		VMB0735	Holder Spring (R)	1	
141(4)		VML1111	Sub Arm (R)	1	
142(4)		VML1110	Sub Arm (L)	1	
143(4)		VML1100	Main Arm (R)	1	
144(4)		VMA4388	Cassette Compartment	1	
			Support Angle (R)		
145(4)		VMD0269	Cassette Guide	1	
146(4)		VMB1011	Blind Spring	1	
147(4)		VKF0104	Blind	1	
148(4)		VMA4716	Transistor Holder Guard	1	
149(4)		VXA1588	Sensor Angle 1 Unit	1	
150(4)		VMG0206	Stopper Rubber	1	
151(4)		VDG0100	Damper Unit	1	
152(4)		VMD0092	Transistor Holder (L)	1	
153(4)		VMM0101	Coupling Rod	1	
154(4)		VMB0674	Holder Spring (L)	1	
155(4)		VMA5825	Chassis Angle (L)	1	
156(4)		VMA5813	Adjust Hook	1	
157(4)		VXL0873	Soft Brake (T) Unit	1	
158(4)		VMB0886	Soft Brake Spring (T)	1	
159(4)		VDP0772	Counter Pulley	1	
160(4)		VXA1570	Chassis Angle (R) 1 Unit	1	
163(5)		VMZ0411	Antenna Booster Barrier	1	
164(5)		VMA5847	Earth Angle	1	
167(5)		VGQ0299	Power Cord Lock	1	
168(5)		VSC0708	Shield Case	1	
169(5)		VEJ0240	Remote Control Jack Unit	1	
170(5)		VGQ0300	Jack Holder	1	
171(5)		ENPE716	Antenna Booster	1	
172(5)		ENC17571	RF Converter	1	
173(5)		VGU0443	Counter Button	1	
174(5)		VMB1043	Button Spring (A)	1	
175(5)		VDC0031	Counter	1	
176(5)		VDV0143	Counter Belt	1	
177(5)		VMA5820	P.C. Board Angle	1	
178(5)		VKC0057	Hinge	1	
179(5)		VKC0066	Hinge	1	
180(5)		VKU0173	Bottom Plate	1	
181(5)		VJF0112	P.C. Board Protector	1	
183(5)		VYP0814	Front Panel Unit	1	
184(5)		VGP0713	Cassette Cover	1	
185(5)		VYP0638	Top Panel Unit	1	
186(5)		ETP66PS261E	Power Transformer	1	
187(5)		VMZ0477	Power Transformer Barrier	1	
188(5)		VHD0059	Screw	6	
189(5)		VHD0055	Screw	2	
190(6)		VPN0856	Cushion (R)	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Screws		
250(1,2,3,4,5)		XTV3+8BFN		35	
251(3,5)		XTV3+10G		3	
252(5)		XTV3+8G		1	
253(5)		XTV4+10A		3	
254(5)		XTV4+15A		3	
256(4)		XTV3+6FS		5	
257(2,4)		XTV3+6F		2	
258(4)		XTV4+35A		4	
259(3)		XTV3+10F		3	
260(3)		XTV3+18F		1	
261(3)		XTV3+C6S		1	
263(4)		XSN3+8S		4	
264(4)		XSN3+6S		6	
265(4)		XSN3+12S		1	
266(1,4)		XSN3+8S		4	
267(3)		XSN3+10S		1	
268(1,3)		XSN3+4S		7	
269(1,3)		XSN3+6S		2	
270(1,2)		XSN3+8S		7	
271(1)		XSN3+12S		4	
272(1)		XSN3+10BNS		2	
273(1)		VHD0089		1	
274(2)		XSN2+10		2	
275(1)		XSN2+5		1	
276(2)		XXE26D3FP		0	
277(1)		XSS26+6		1	
278(2)		XYC3+BFS		1	
279(2)		XSN3+10S		1	
280(2)		XSS3+6S		3	
281(1)		XSN3D+10S		1	
191(6)		VPN0855	Cushion (L)	1	
193(6)		VJA0130	DIN Cable	1	
195(6)		VQF1033	Fan Bag	1	
196(6)		VPG1360	Packing Case	1	
198(6)		VPF0144	Polyethylene Bag	1	
199(2)		VMX0249	Soft Brake Stopper	1	
200(4)		VDV0139	Counter Belt	1	
201(5)		VJA0111	AC Cord	1	
202(5)		VEJ0237	Rear Jack Unit	1	
203(5)		VMG0272	RF Converter Bushing	1	
205(5)		VKF0155	Front Door (L)	1	
206(5)		VGQ0298	Button Holder	2	
207(5)		VMB0904	Button Spring (B)	2	
208(5)		VGU0505	Power Button	1	
209(5)		VGU0504	Timer Rec Button	1	
210(5)		VGU0890	Memory Button	1	
211(5)		VMB0909	Button Spring (C)	2	
212(5)		VGU0484	OTR Button	1	
213(5)		VMT0068	Button Cushion	1	
214(5)		VGU0891	Dolby NR Button	1	
216(5)		VKW0120	Timer Filter	1	
217(5)		VGT0254	AFC SW Knob	1	
218(5)		VYK0447	Preset Cover Unit	1	
220(3)		VEK1735	Dew Sensor Unit	1	
223(5)		VGT0295	System Select SW Knob	1	
224(2)		VXA1823	P5 Post Base Unit	1	
225(2)		VML1473	Cam Lever	1	
226(2)		VXA1801	P5 Post Base 1 Unit		
227(2)		VXL1096	Pull Out (P5) Arm Unit	1	
228(2)		VMB1131	P5 Arm Spring	1	
229(2)		VHN0023	Nylon Nut	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Washers & Rings		
290(1,2,3)		XUEV4FT		10	
291(1,2,3,4)		XWXV4D9		11	
292(2)		XWG4		1	
293(2)		XWXV4D11		3	
294(2)		XWXV51F66		1	
295(2)		XWXV3Z6		1	
296(1,2,3,4)		XUC25FT		7	
297(2,3,4)		XUC3FT		10	
298(2,3)		XWXV3D6		18	
299(2)		XWA3B		1	
300(2)		XUC15FT		2	
301(1)		XNG4ES		1	
302(2)		XNG3ES		1	
303(2,3,4)		XWXV2D4		4	
304(3)		XWC3B		1	
305(4)		XUC15FT		2	
306(4)		XUEV2FP		2	
307(2,3)		XWXV3D		2	
308(1)		XWXV4Y6.5		1	
309(2)		XWXV3A6		1	
310(2)		XWXV3.5F7.8		1	

ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-332-EG

Notes:
1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified by ⚠ have special characteristics important for safety.
   When replacing any of these components, use only the original ones.
3. Unless otherwise specified,
   All resistors are in OHMS (Ω), 1/8W ±5% carbon. K=1,000Ω, M=1,000KΩ.
   All capacitors are in MICROFARADS (μF), ±10% P=μμF.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		VEP02167A	Servo & System Control	1	
			P.C. Board Unit		
		VEP03169B	Luminance, Chrominance	1	
			Audio & Power Supply		
			P.C. Board Unit		
		VEP04089B	Sub Audio P.C. Board Unit	1	
		VEP06192B	Operation P.C. Board Unit	1	
		VEP07156A	TV Demodulator	1	
			P.C. Board Unit		
		VEP07157A	Decoder P.C. Board Unit	1	
		VEP07163A	CH Select & Timer	1	
			P.C. Board Unit		
		VEP07164A	Back-Up P.C. Board Unit	1	
		VJB01124	Power Transformer	1	⚠
			P.C. Board		
		VJB00A14	LED Connection P.C.Board	1	
		VJB00709	Supply Photo TR	1	
			P.C. Board		
		VJB00726	Mode Select SW P.C. Board	1	
		VJB00872	Take-Up Photo TR	1	
			P.C. Board		
		VJB00872	Motor Connection	1	
			P.C. Board		
		VJB00876	Reel Sensor P.C. Board	1	
		VJB00879	Remote Control P.C. Board	1	
		VJB00881	Full Erase Head	1	
			P.C. Board		
		VJB00976	Sensor LED P.C. Board	1	
		VJB00A36	AV Terminal P.C. Board	1	
		VJB00A37	Line Out P.C.Board	1	
		ENC17571	RF Converter Unit	1	⚠
		TNV77759F2	Tuner Unit	1	⚠

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		VGQ0332	Preset VR Case	1	
		VGT0282	Timer Mode Select SW Knob	1	
		VGT0283	Picture VR Knob	1	
		VGT0299	Tracking VR Knob	1	
		VSC0747	Head Amp Top Cover	1	
		VEP02167A	Servo & System Control		
			P.C. Board Unit		
			Servo Section		
			Integrated Circuits		
IC2001		μPC1504C		1	
IC2002		AN6677		1	
IC2003		μPC1505C		1	
IC2004,2005		μPD4013BC		2	
IC2006		μPD4081BC		1	
IC2007		DN819		1	
			Transistors		
Q2001,2002		2SD636		2	(Q,R,S)
Q2003		2SB641		1	(Q,R,S)
Q2004,2005		2SD636		2	(Q,R,S)
Q2006		2SD889		1	(Q,R,S)
Q2007		2SD1265		1	(Q,R,S)
Q2008		2SB643		1	(Q,R,S)
Q2009-2011		2SD636		3	(Q,R,S)
Q2012		2SB641		1	(Q,R,S)
Q2013		2SD636		1	(Q,R,S)
Q2014		2SB641		1	(Q,R,S)
Q2015		2SD636		1	(Q,R)

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		Diodes		
D2001-2015	MA165		15	
D2020	MA165		1	
		Resistors		
R2001	ERDS2TJ562	5.6K	1	
R2002	ERDS2TJ223	22K	1	
R2003,2004	ERDS2TJ683	68K	2	
R2005-2007	ERDS2TJ563	56K	3	
R2008	ERDS2TJ104	100K	1	
R2009	EVLV3U00MB15	Variable 100K	1	
R2010	EVNK6AA00B15	Variable 100K	1	
R2011	ERDS2TJ153	15K	1	
R2012	EVNK6AA00B25	Variable 200K	1	
R2013	ERDS2TJ153	15K	1	
R2014	EVNK6AA00B25	Variable 200K	1	
R2015	ERDS2TJ823	82K	1	
R2016	ERDS2TJ104	100K	1	
R2017	EVMK4GA00B54	Variable 50K	1	
R2018	ERDS2TJ223	22K	1	
R2019	ERD25TJ332	3.3K	1	
R2020	ERDS2TJ683	68K	1	
R2021	ERD10TKG9102	91K	1	
R2022	EVMK4GA00B54	Variable 50K	1	
R2023	ERDS2TJ332	3.3K	1	
R2024	ERDS2TJ184	180K	1	
R2025	ERDS2TJ102	1K	1	
R2026	ERDS2TJ332	3.3K	1	
R2027	ERX12ANJR47	Metal 1/2W 0.47	1	
R2028-2030	ERD25TJ220	22	3	
R2031	ERDS2TJ823	82K	1	
R2032	ERDS2TJ153	15K	1	
R2033	ERDS2TJ332	3.3K	1	
R2034	ERDS2TJ823	82K	1	
R2035	EVNK6AA00B15	Variable 100K	1	
R2036	ERDS2TJ103	10K	1	
R2037	ERDS2TJ104	100K	1	
R2038	ERDS2TJ221	220	1	
R2039	ERDS2TJ105	1M	1	
R2040	ERDS2TJ183	18K	1	
R2041	ERDS2TJ102	1K	1	
R2042	ERDS2TJ222	2.2K	1	
R2043	ERDS2TJ333	33K	1	
R2044	EVMK4GA00B54	Variable 50K	1	
R2045	ERDS2TJ563	56K	1	
R2046	ERDS2TJ104	100K	1	
R2047	ERDS2TJ124	120K	1	
R2048	ERDS2TJ822	8.2K	1	
R2049	ERO10TKG2201	Metal 2.2K	1	
R2050	ERDS2TJ103	10K	1	
R2051	ERDS2TJ223	22K	1	
R2052	ERDS2TJ104	100K	1	
R2053	ERDS2TJ123	12K	1	
R2054	ERDS2TJ562	5.6K	1	
R2055	ERDS2TJ153	15K	1	
R2056	ERDS2TJ154	150K	1	
R2057	ERDS2TJ102	1K	1	
R2058	ERDS2TJ333	33K	1	
R2059	ERDS2TJ102	1K	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R2060	ERQ14AJ390	Fuse 39	1	⚠
R2061	ERQ2AJP6R8	Fuse 2W 6.8	1	⚠
R2062	ERDS2TJ103	10K	1	
R2063	ERDS2TJ101	100	1	
R2064	EVJEFA20B15	Variable 100K	1	
R2065	ERDS2TJ152	1.5K	1	
R2066	ERDS2TJ472	4.7K	1	
R2067	ERDS2TJ562	5.6K	1	
R2068	ERDS2TJ103	10K	1	
R2069	ERDS2TJ823	82K	1	
R2070	ERDS2TJ333	33K	1	
R2071	ERDS2TJ223	22K	1	
R2072	ERDS2TJ563	56K	1	
R2073,2074	ERC14GJ275	Solid 2.7M	2	
R2075	EVJEAF20B23	Variable 2K	1	
R2076-2078	ERDS2TJ103	10K	3	
R2079	ERDS2TJ102	1K	1	
R2080	ERDS2TJ474	470K	1	
R2083	ERDS2TJ102	1K	1	
R2084	EVNK6AA00B15	Variable 100K	1	
R2086	ERDS2TJ473	47K	1	
R2087	ERDS2TJ102	1K	1	
R2094	ERDS2TJ473	47K	1	
R2095	ERDS2TJ103	10K	1	
R2096	ERDS2TJ563	56K	1	
R2097-2099	ERDS2TJ104	100K	3	
R2101-2103	ERDS2TJ473	47K	3	
R2104	ERDS2TJ223	22K	1	
R2116	ERDS2TJ823	82K	1	
R2117	ERDS2TJ183	18K	1	
		Capacitors		
C2001	ECQM1H472KZ	Mylar 50V 4700P	1	
C2002	ECKF1H103KB	Ceramic 50V 0.01	1	
C2003	ECEA1CS100	Electrolytic 16V 10	1	
C2004	ECQV05563JZ	Mylar 50V 0.056	1	
C2005,2006	ECQM1H183KZ	Mylar 50V 0.018	2	
C2007	ECQM1H273KZ	Mylar 50V 0.027	1	
C2008	ECQM1H683KV	Mylar 50V 0.068	1	
C2009	ECQM1H223KZ	Mylar 50V 0.022	1	
C2010	ECQM1H224KZ	Mylar 50V 0.22	1	
C2011	ECEA1CS220	Electrolytic 16V 22	1	
C2012	ECQM1H683KV	Mylar 50V 0.068	1	
C2013	ECQM1H393KS	Mylar 50V 0.039	1	
C2014	ECQP1823JZ	Mylar 100V 0.082	1	
C2015	ECEA1AS330	Electrolytic 10V 33	1	
C2016	ECQM1H103KZ	Mylar 50V 0.01	1	
C2017	ECEA1AS101	Electrolytic 10V 100	1	
C2018	ECEA1CS101	Electrolytic 16V 100	1	
C2019	ECQM1H103KZ	Mylar 50V 0.01	1	
C2020	ECQM1H333KS	Mylar 50V 0.033	1	
C2021	ECEA1HS3R3	Electrolytic 50V 3.3	1	
C2022-2024	ECEA1HN2R2	Electrolytic 50V 2.2	3	
C2025	ECEA1HS2R2	Electrolytic 50V 2.2	1	
C2026-2028	ECEA50ZR22	Electrolytic 50V 0.22	3	
C2029	ECQM1H822KZ	Mylar 50V 8200	1	
C2030	ECEA1CS100	Electrolytic 16V 10	1	
C2031	ECQM1H223KZ	Mylar 50V 0.022	1	
C2032	ECEA50ZR1	Electrolytic 50V 0.1	1	
C2033	ECEA1HS010	Electrolytic 50V 1	1	
C2034	ECQP1104JZ	Mylar 100V 0.1	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C2035		ECEA1CS100	Electrolytic 16V 10	1	
C2036		ECQM1H683KV	Mylar 50V 0.068	1	
C2037		ECQM1H333KS	Mylar 50V 0.033	1	
C2038		ECEA1CS470	Electrolytic 16V 47	1	
C2039		ECEA1AS470	Electrolytic 10V 47	1	
C2040		ECEA1CS100	Electrolytic 16V 10	1	
C2041		ECKF1H103KB	Ceramic 50V 0.01	1	
C2042		ECEA1AS221	Electrolytic 10V 220	1	
C2043		ECEA1HS010	Electrolytic 50V 1	1	
C2044		ECEA1CS100	Electrolytic 16V 10	1	
C2045		ECEA1AS101	Electrolytic 10V 100	1	
C2046		ECQV05274JZ	Mylar 50V 0.27	1	
C2047,2048		ECQV05104JB	Mylar 50V 0.1	2	
C2049		ECEA1CS100	Electrolytic 16V 10	1	
C2050		ECQM1H182KZ	Mylar 50V 1800P	1	
C2051		ECQM1H103KZ	Mylar 50V 0.01	1	
C2052		ECQM1H822KZ	Mylar 50V 8200	1	
C2053		ECQM1H682KZ	Myalr 50V 6800P	1	
C2054		ECQM1H123KZ	Mylar 50V 0.012	1	
C2058		ECEA50ZR33	Electrolytic 50V 0.33	1	
C2060,2061		ECEA1CS100	Electrolytic 16V 10	2	
C2065		ECEA50ZR47	Electrolytic 50V 0.47	1	
C2066		ECQP1683JZ	Mylar 100V 0.068	1	
C2070		ECEA1ES220	Electrolytic 25V 22	1	
			Coil		
L2001		VLQ80W102K	1mH	1	
			Relay		
RY2001		VSY2029		1	
			Connectors		
P001		VJP1147	12P	1	
P2001		VJP1141	2P	1	
			Miscellaneous		
		VSC0739	Heat Sink	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			System Control Section		
			Integrated Circuits		
IC6001		MN1405VKK		1	
IC6002		M53216P		1	
IC6003		M53216P		1	or HD7416P
IC6004		AN6912		1	or µPC339C
IC6005		µPD4069UBC		1	
IC6006		µPC358C		1	
IC6007		VCR0077		1	
			Transistors		
Q6001		2SD636		1	
Q6003		2SA719		1	(P,Q,R,S)
Q6004		2SD636		1	
Q6005-6007		2SA719		3	(P,Q,R,S)
Q6008		2SD636		1	
Q6009,6010		2SB641		2	
Q6011		2SD636		1	(Q,R,S,T)
Q6012		2SD636		1	
Q6015		2SD636		1	
Q6016-6017		2SB793		2	(Q,R,S)
Q6018-6019		2SD973		2	(Q,R,S)
Q6020		2SD636		1	(R,S,T)
Q6021		2SD636		1	(Q,R,S,T)
Q6022		2SB641		1	
Q6023		2SD1273		1	
Q6024		2SD1273		1	
Q6025		2SD636		1	(Q,R,S,T)
Q6026,6027		2SB819		2	(Q,R)
Q6028,6029		2SD1051		2	(Q,R)
Q6030		2SD636		1	(Q,R,S,T)
Q6032		2SD636		1	
			Diodes		
D6001-6005		MA165		5	
D6007		MA165		1	
D6009-6024		MA165		16	
D6026-6028		MA165		3	
D6029,6030		OA95		2	
D6031-6034		MA165		4	
D6035		OA95		1	
D6036-6040		MA165		5	
D6042		RD12JB2	Zener	1	
D6043-6055		MA165		13	
D6056		MA165		1	
D6058		MA165		1	
D6061		MA165		1	
D6065		MA165		1	
			Resistors		
R6001		ERDS2TJ563	56K	1	
R6002		ERDS2TJ153	15K	1	
R6005		ERDS2TJ103	10K	1	
R6006		ERDS2TJ152	1.5K	1	
R6007-6009		ERDS2TJ223	22K	3	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R6010		ERDS2TJ103	10K	1	
R6011		ERDS2TJ152	1.5K	1	
R6012		ERDS2TJ102	1K	1	
R6013		ERDS2TJ152	1.5K	1	
R6014		ERDS2TJ102	1K	1	
R6015		ERDS2TJ152	1.5K	1	
R6016		ERX1ANJ1R0H	Metal 1W 1.0	1	
R6017		ERQ14AJ680	Metal 6.8	1	⚠
R6019		ERDS2TJ333	33K	1	
R6020,6021		ERDS2TJ103	10K	2	
R6022		ERDS2TJ152	1.5K	1	
R6023		ERDS2TJ472	4.7K	1	
R6024		ERDS2TJ152	1.5K	1	
R6025		ERDS2TJ333	33K	1	
R6031		ERDS2TJ103	10K	1	
R6032,6033		ERDS2TJ223	22K	2	
R6034		ERDS2TJ333	33K	1	
R6035,6036		ERDS2TJ103	10K	2	
R6037		ERDS2TJ682	6.8K	1	
R6038,6039		ERDS2TJ103	10K	2	
R6040		ERDS2TJ152	1.5K	1	
R6041		ERDS2TJ102	1K	1	
R6042		ERDS2TJ124	120K	1	
R6043		ERDS2TJ223	22K	1	
R6044		ERDS2TJ105	1M	1	
R6045		ERDS2TJ332	3.3K	1	
R6046		ERO10TKG1542	Metal 15.4K	1	
R6047		ERDS2TJ474	470K	1	
R6048		ERO10TKG1212	Metal 12.1K	1	
R6049		ERO10TKG2261	Metal 2.26K	1	
R6050		ERDS2TJ332	3.3K	1	
R6051		ERDS2TJ823	82K	1	
R6052		ERDS2TJ224	220K	1	
R6053		ERDS2TJ563	56K	1	
R6054		ERDS2TJ822	8.2K	1	
R6055		ERDS2TJ105	1M	1	
R6056		ERDS2TJ681	680	1	
R6057		ERDS2TJ104	100K	1	
R6058		ERDS2TJ103	10K	1	
R6059		ERDS2TJ333	33K	1	
R6060		ERD25TJ681	680	1	
R6061		ERD50TJ681	1/2W 680	1	
R6062		ERDS2TJ333	33K	1	
R6063		ERDS2TJ103	10K	1	
R6065		ERDS2TJ103	10K	1	
R6066		ERDS2TJ102	1K	1	
R6067,6068		ERDS2TJ223	22K	2	
R6069		ERDS2TJ272	2.7K	1	
R6070		ERDS2TJ273	27K	1	
R6071		ERDS2TJ332	3.3K	1	
R6072		ERDS2TJ333	33K	1	
R6073		ERDS2TJ153	15K	1	
R6074		ERDS2TJ102	1K	1	
R6075		ERDS2TJ682	6.8K	1	
R6076		ERDS2TJ562	5.6K	1	
R6077		ERDS2TJ182	1.8K	1	
R6078,6079		ERDS2TJ103	10K	2	
R6080		ERX1ANJR82H	Metal 1W 0.82	1	
R6081,6082		ERDS2TJ274	270K	2	
R6083		ERDS2TJ222	2.2K	1	
R6084,6085		ERDS2TJ102	1K	2	
R6086		ERDS2TJ223	22K	1	
R6087,6088		ERDS2TJ102	1K	2	
R6089		ERDS2TJ223	22K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R6090		ERD50TJ221	1/2W 220	1	
R6091		ERD50TJ471	1/2W 470	1	
R6092		ERDS2TJ154	150K	1	
R6093		ERDS2TJ222	2.2K	1	
R6094		ERDS2TJ223	22K	1	
R6095-6098		ERDS2TJ102	1K	4	
R6099		ERDS2TJ223	22K	1	
R6100		ERD25TJ471	470	1	
R6101		ERD25TJ471	470	1	
R6104		ERDS2TJ333	33K	1	
R6105		ERDS2TJ222	2.2K	1	
R6110		ERDS2TJ104	100K	1	
R6111		ERDS2TJ223	22K	1	
			Capacitors		
C6001		ECEA1AS470	Electrolytic 10V 47	1	
C6002		ECKF1H103ZF	Ceramic 50V 0.01	1	
C6005		ECEA50ZR1	Electrolytic 50V 0.1	1	
C6006,6007		ECEA25Z3R3	Electrolytic 25V 3.3	2	
C6008,6009		ECCF1H331K5	Ceramic 50V 330P	2	
C6010		ECEA1AS101	Electrolytic 10V 100	1	
C6011		ECQM1H184JV	Mylar 50V 0.18	1	
C6012		ECQM1H682JZ	Mylar 50V 6800P	1	
C6013		ECEA1AS470	Electrolytic 10V 47	1	
C6014,6015		ECKF1H103ZF	Ceramic 50V 0.01	2	
C6016		ECEA50Z1	Electrolytic 50V 1	1	
C6017-6019		ECKF1H103ZF	Ceramic 50V 0.01	3	
C6020		ECQM1H472KZ	Mylar 50V 4700P	1	
C6021-6023		ECKF1H102ZF	Ceramic 50V 1000P	3	
C6025		ECEA1HS010	Electrolytic 50V 1	1	
C6026		ECKF1H103ZF	Ceramic 50V 0.01	1	
C6027		ECEA1AS220	Electrolytic 10V 22	1	
C6028		ECEA1HN010	Electrolytic 50V 1	1	
C6029		ECKF1H103ZF	Ceramic 50V 0.01	1	
			Resistor Arrays		
RX6001		EXBP87223J	22K	1	
RX6002		EXBP88332K	3.3K	1	
RX6003		EXBP88223J	22K	1	
RX6004		EXBP84103K	10K	1	
RX6005		EXBP85103K	10K	1	
			Crystal		
X6001		VSX0107		1	or EF0A455K01V1
			Switch		
SW6001		VSS0068		1	
			Connectors		
P6010		VJP1141	2P	1	
P6011		VJP1142	3P	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
	VEP03169B	Luminance, Chrominance,		
		Audio & Power Supply		
		P.C. Board Unit		
		Power Supply Section		
		Integrated Circuits		
IC1001	STR1195		1	⚠
IC1002	AN7805		1	⚠
IC1003	AN7812R		1	⚠
		Diodes		
D1002-1005	10E1LF		4	
D1006	10E2LF		1	
D1007	MA165		1	
D1008	RD18EB2	Zener	1	
D1009-1012	10E1LF		4	
D1013	MA165		1	
		Resistors		
R1003	ERDS2TJ682	6.8K	1	
R1004	ERQ12HJR68	Fuse 1/2W 0.68	1	
		Capacitors		
C1003	ECKF1H103ZF	Ceramic 50V 0.01	1	
C1004	ECEA1CS222	Electrolytic 16V 2200	1	
C1005	ECEA1AS101	Electrolytic 10V 100	1	
C1006,1007	ECEA10Z100	Electrolytic 10V 10	2	
C1009	ECEA2AS221	Electrolytic 100V 220	1	
C1010	ECKF1H103ZF	Ceramic 50V 0.01	1	
C1011	ECEA1ES222	Electrolytic 25V 2200	1	
C1012,1013	ECEA1CS101	Electrolytic 16V 100	2	
		Connectors		
P1002	VJP0097	8P	1	
P1003	VJP1146	10P	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		Luminance Section		
		Integrated Circuits		
IC3001	AN6306		1	
IC3002	AN6326		1	
IC3003	AN6337		1	
IC3004	BA7004		1	
		Transistors		
Q3001,3002	2SB641		2	
Q3003	2SD636		1	
Q3004	2SC2377		1	
Q3005	2SC2206		1	
Q3006	2SB641		1	
Q3007	2SC2377		1	
Q3008,3009	2SC2377		2	(C,D,V,T)
Q3010	2SC2206		1	
Q3011,3012	2SD636		2	
Q3015	2SC2206		1	
Q3016	2SD636		1	
Q3017	2SB641		1	
Q3018	2SC2206		1	
Q3019	2SB641		1	
Q3020	2SB819		1	
Q3021,3022	2SD636		2	
Q3024	2SB641		1	(R,S,T)
Q3025	2SD638		1	(R,S,T)
Q3026	2SD636		1	
		Diodes		
D3001	MA165		1	
D3002	RD3.0EB	Zener	1	
D3003,3004	MA165		2	
D3006-3008	MA165		3	
D3009	RD10EB1	Zener	1	
D3011,3012	MA165		2	
D3022	MA165		1	
		Resistors		
R3001,3002	ERDS2TJ102	1K	2	
R3003	ERDS2TJ562	5.6K	1	
R3004	ERDS2TJ392	3.9K	1	
R3005	ERDS2TJ122	1.2K	1	
R3006	ERDS2TJ222	2.2K	1	
R3007	ERDS2TJ392	3.9K	1	
R3008	ERDS2TJ272	2.7K	1	
R3009	ERDS2TJ182	1.8K	1	
R3010	ERDS2TJ103	10K	1	
R3011	EVNK6AA00B24	Variable 20K	1	
R3012,3013	EVNK6AA00B14	Variable 10K	2	
R3014	ERDS2TJ564	560K	1	
R3015	ERDS2TJ681	680	1	
R3016	ERDS2TJ271	270	1	
R3017	EVNK6AA00B54	Variable 50K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R3018		ERDS2TJ473	47K	1	
R3019		EVNK6AA00B24	Variable 20K	1	
R3020		EVNK6AA00B23	Variable 2K	1	
R3021		ERDS2TJ561	560	1	
R3022		ERDS2TJ820	82	1	
R3023		ERDS2TJ471	470	1	
R3024		ERDS2TJ124	120K	1	
R3025		ERDS2TJ473	47K	1	
R3026		ERDS2TJ562	5.6K	1	
R3027		ERDS2TJ122	1.2K	1	
R3028		ERDS2TJ152	1.5K	1	
R3029		ERDS2TJ821	820	1	
R3030		ERDS2TJ181	180	1	
R3031		ERDS2TJ560	56	1	
R3032,3033		ERDS2TJ682	6.8K	2	
R3034,3035		ERDS2TJ560	56	2	
R3036		ERDS2TJ152	1.5K	1	
R3037		ERDS2TJ100	10	1	
R3038		ERDS2TJ332	3.3K	1	
R3039		ERDS2TJ223	22K	1	
R3040		ERDS2TJ332	3.3K	1	
R3041		ERDS2TJ100	10	1	
R3042,3043		EVNK6AA00B13	Variable 1K	2	
R3044		ERDS2TJ273	27K	1	
R3046,3047		ERDS2TJ152	1.5K	2	
R3048		ERDS2TJ681	680	1	
R3049		ERDS2TJ152	1.5K	1	
R3050		ERDS2TJ102	1K	1	
R3051		ERDS2TJ561	560	1	
R3052		ERDS2TJ102	1K	1	
R3053		ERDS2TJ560	56	1	
R3055		ERDS2TJ102	1K	1	
R3056		ERDS2TJ103	10K	1	
R3057		ERDS2TJ182	1.8K	1	
R3058,3059		ERDS2TJ391	390	2	
R3060		ERDS2TJ122	1.2K	1	
R3062		ERDS2TJ222	2.2K	1	
R3064		ERDS2TJ122	1.2K	1	
R3072		ERDS2TJ334	330K	1	
R3074		ERDS2TJ681	680	1	
R3075		ERDS2TJ564	560K	1	
R3076		ERDS2TJ222	2.2K	1	
R3077		ERDS2TJ100	10	1	
R3078,3079		ERDS2TJ222	2.2K	2	
R3080		ERDS2TJ392	3.9K	1	
R3081		ERDS2TJ821	820	1	
R3082		ERDS2TJ222	2.2K	1	
R3084		ERDS2TJ183	18K	1	
R3085		ERDS2TJ562	5.6K	1	
R3086		ERDS2TJ151	150	1	
R3087		ERDS2TJ391	390	1	
R3088		ERDS2TJ151	150	1	
R3089		ERDS2TJ121	120	1	
R3090		ERDS2TJ680	68	1	
R3091		EVNK6AA00B23	Variable 2K	1	
R3092		ERD50TJ221	1/2W 220	1	
R3093,3094		ERDS2TJ102	1K	2	
R3095		ERDS2TJ682	6.8K	1	
R3096		ERDS2TJ152	1.5K	1	
R3097		ERDS2TJ103	10K	1	
R3098,3099		ERDS2TJ152	1.5K	2	
R3100		ERDS2TJ472K	4.7K	1	
R3101		ERDS2TJ562	5.6K	1	
R3102		ERDS2TJ182	1.8K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R3103		ERDS2TJ103	10K	1	
R3104		ERDS2TJ472K	4.7K	1	
R3106		ERDS2TJ103	10K	1	
R3110-3112		ERDS2TJ222	2.2K	3	
R3113		ERDS2TJ272	2.7K	1	
R3114		ERDS2TJ561	560	1	
R3115		ERDS2TJ750	75	1	
R3116		ERG1ANJ180H	Metal Oxide 1W 18	1	
R3117		ERDS2TJ391	390	1	
R3118		ERDS2TJ332	3.3K	1	
R3119		ERDS2TJ821	820	1	
R3120		ERDS2TJ223	22K	1	
R3121,3122		ERDS2TJ563	56K	2	
R3123		ERDS2TJ181	180	1	
R3125,3126		ERDS2TJ750	75	2	
R3128		ERDS2TJ103	10K	1	
R3129		ERDS2TJ223	22K	1	
R3134-3136		ERDS2TJ223	22K	3	
R3137		ERDS2TJ332	3.3K	1	
R3138		ERDS2TJ682	6.8K	1	
R3139		ERDS2TJ471	470	1	
R3140		ERDS2TJ271	270	1	
R3141		ERDS2TJ102	1K	1	
R3142		ERDS2TJ103	10K	1	
R3200		ERDS2TJ103	10K	1	
R3201		ERDS2TJ103	10K	1	
R3202,3203		ERDS2TJ102	1K	2	
			Capacitors		
C3001		ECEA1HNR47	Electrolytic 50V 0.47	1	
C3002,3003		ECKF1H271KB	Ceramic 50V 270P	2	
C3004		ECCF1H121KC	Ceramic 50V 120P	1	
C3005		ECEA1HN010	Electrolytic 50V 1	1	
C3006		ECKF1H103ZF	Ceramic 50V 0.01	1	
C3007		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C3008		ECEA0JS470	Electrolytic 6.3V 47	1	
C3009		ECEA1HS2R2	Electrolytic 50V 2.2	1	
C3010		ECKF1H103ZF	Ceramic 50V 0.01	1	
C3011		ECCF1H121KC	Ceramic 50V 120P	1	
C3012		ECEA0JS221	Electrolytic 6.3V 220	1	
C3013		ECCF1H390KC	Ceramic 50V 39P	1	
C3014		ECKF1H103ZF	Ceramic 50V 0.01	1	
C3015		VCY25333KX	Semiconductor 25V 0.033	1	
C3016		ECEA0JS470	Electrolytic 6.3V 47	1	
C3017		ECEA1AS470	Electrolytic 10V 47	1	
C3018		ECCF1H820KC	Ceramic 50V 82P	1	
C3019		ECKF1H181KB	Ceramic 50V 180P	1	
C3020		ECEA1CS100	Electrolytic 16V 10	1	
C3021		ECKF1H221KB	Ceramic 50V 220P	1	
C3022,3023		ECKF1H103ZF	Ceramic 50V 0.01	2	
C3024		ECEA50Z1	Electrolytic 50V 1	1	
C3025		ECEA1CS100	Electrolytic 16V 10	1	
C3026		ECEA1HS010	Electrolytic 50V 1	1	
C3027		ECEA0JS470	Electrolytic 6.3V 47	1	
C3028		ECKF1H103ZF	Ceramic 50V 0.01	1	
C3029		ECEA1CS100	Electrolytic 16V 10	1	
C3030		ECQV05104JB	Mylar 50V 0.1	1	
C3031,3032		ECVIZW40X64T	Trimmer 40P	2	
C3033		ECQV05104JB	Mylar 50V 0.1	1	
C3034		ECEA1CS100	Electrolytic 16V 10	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C3035		ECKF1H103ZF	Ceramic 50V 0.01	1	
C3036		ECEA1CS100	Electrolytic 16V 10	1	
C3037		ECKF1H103ZF	Ceramic 50V 0.01	1	
C3038		ECKF1H151KB	Ceramic 50V 150P	1	
C3039		ECKF1H271KB	Ceramic 50V 270P	1	
C3040		ECKF1H561KB	Ceramic 50V 560P	1	
C3041		ECCF1H560KC	Ceramic 50V 56P	1	
C3042		ECCF1H220KC	Ceramic 50V 22P	1	
C3043		ECKF1H103ZF	Ceramic 50V 0.01	1	
C3044		ECKF1H271KB	Ceramic 50V 270P	1	
C3045		VCKF1H431JS	Semiconductor 50V 430P	1	
C3047		ECCF1H390KC	Ceramic 50V 39P	1	
C3048-3050		ECKF1H103ZF	Ceramic 50V 0.01	3	
C3051		ECCF1H120KC	Ceramic 50V 12P	1	
C3052		ECQV05104JB	Mylar 50V 0.1	1	
C3053		ECCF1H470KC	Ceramic 50V 47P	1	
C3054		ECKF1H103ZF	Ceramic 50V 0.01	1	
C3057		ECKF1H222KB	Ceramic 50V 2200P	1	
C3058		ECEA0JS221	Electrolytic 6.3V 220	1	
C3059		ECKF1H181KB	Ceramic 50V 180P	1	
C3060,3061		ECEA1HS010	Electrolytic 50V 1	2	
C3062		ECKF1H181KB	Ceramic 50V 180P	1	
C3063		ECEA1CS100	Electrolytic 16V 10	1	
C3064		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C3065		ECEA1HS2R2	Electrolytic 50V 2.2	1	
C3066		ECKF1H102KB	Ceramic 50V 1000P	1	
C3067		ECEA0JS470	Electrolytic 6.3V 47	1	
C3068		VCKF1H182JS	Semiconductor 50V 1800P	1	
C3069		VCKF1H471JS	Semiconductor 50V 470P	1	
C3070		ECKF1H102KB	Ceramic 50V 1000P	1	
C3071		ECKF1H391KB	Ceramic 50V 390P	1	
C3072		ECEA1CS100	Electrolytic 16V 10	1	
C3073		ECEA0JS471	Electrolytic 6.3V 470	1	
C3074		ECEA1CS101	Electrolytic 16V 100	1	
C3075		ECEA1CS100	Electrolytic 16V 10	1	
C3079		ECEA1CS330	Electrolytic 16V 33	1	
C3080,3081		ECEA1CS100	Electrolytic 16V 10	2	
C3082,3083		VCY25332KX	Semiconductor 25V 3300P	2	
C3084		ECEA1CS330	Electrolytic 16V 33	1	
C3085		ECEA1CS101	Electrolytic 16V 100	1	
C3086		ECEA1CS100	Electrolytic 16V 10	1	
C3087		ECKF1H101KB	Ceramic 50V 100P	1	
C3088		ECCF1H390KC	Ceramic 50V 39P	1	
C3089		ECKF1H821KB	Ceramic 50V 820P	1	
C3090		ECCF1H330KC	Ceramic 50V 33P	1	
C3091		ECEA1AS470	Electrolytic 10V 47	1	
C3092		ECQV05104JB	Mylar 50V 0.1	1	
C3094		ECEA0JS221	Electrolytic 6.3V 220	1	
			Coils		
L3001		VLQEL06F221K	220μH	1	
L3002		VLQEL06F101K	100μH	1	
L3003		VLQEL06F820K	82μH	1	
L3004		VLQEL06F151K	150μH	1	
L3005		VLQEL06F270K	27μH	1	
L3006,3007		VLQEL06F101K	100μH	2	
L3008		VLR80W102K	1mH	1	
L3009		VLQEL06F180K	18μH	1	
L3010		VLQEL06F471K	470μH	1	
L3011		VLQEL06F220K	22μH	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
L3012,3013		VLQEL06F100K	10μH	2	
L3014		VLQEL06F151K	150μH	1	
L3015		VLQEL06F2R7K	2.7μH	1	
L3016		VLQEL06F101K	100μH	1	
L3019		VLQEL06F101K	100μH	1	
L3020		VLQEL06F3R3K	3.3μH	1	
L3021		VLQEL06F150K	15μH	1	
L3022-3024		VLQEL06F101K	100μH	3	
L3025		VLQEL06F3R3K	3.3μH	1	
L3026		VLQEL06F560K	56μH	1	
L3031,3032		VLQEL06F2R2K	2.2μH	2	
			Filters		
FL3001		VLF0186		1	or VLF0208
FL3002		VLF0187		1	
FL3003		VLF0188		1	or VLF0210
			Delay Line		
DL3001		VLD0012		1	
			Crystal		
X3001		VSX0099		1	
			Switches		
SW3001		VSS0053		1	
SW3002		VSSS0001		1	
			Connector		
P002		VJP1144	6P	1	
			Miscellaneous		
		VSC0744	Shield Case (Top)		
		VSC0745	Shield Case (Main)		
		VSC0953	Shield Case (Bottom)		
		VJH0247	Input Jack Panel		
		VGT0282	Mode Select Knob		
		VGT0283	Picture VR Knob		
		VGT0299	Tracking VR Knob		
		VSG0747	Head Amp Shield Case		

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Audio Section		
			Integrated Circuits		
IC4001,4002		TA7355P		2	
IC4003		AN7311		1	
			Transistor		
Q4001		2SD638		1	(R)
			Resistors		
R4001,4002		ERDS2TJ473	47K	2	
R4003		ERDS2TJ104	100K	1	
R4004		ERDS2TJ332	3.3K	1	
R4005		ERDS2TJ101	100	1	
R4006		EVNK6AA00B14	Variable 10K	1	
R4007		ERDS2TJ104	100K	1	
R4008		ERDS2TJ332	3.3K	1	
R4009		ERDS2TJ101	100	1	
R4010		EVNK6AA00B14	Variable 10K	1	
R4011,4012		EVNK6AA00B15	Variable 100K	2	
R4013,4014		ERDS2TJ153	15K	2	
R4015		ERDS2TJ4R7	4.7	1	
R4016		ERDS2TJ153	15K	1	
R4017		ERDS2TJ101	100	1	
			Capacitors		
C4001		ECEA1CS100	Electrolytic 16V 10	1	
C4003		ECQM1H102JZ	Mylar 50V 1000P	1	
C4004		ECEA1CS100	Electrolytic 16V 10	1	
C4005		ECEA1AS101	Electrolytic 10V 100	1	
C4006		ECQM1H102JZ	Mylar 50V 1000P	1	
C4007		ECEA1CS100	Electrolytic 16V 10	1	
C4008		ECEA1AS470	Electrolytic 10V 47	1	
C4009		ECQV05333JZ	Mylar 50V 0.033	1	
C4010		ECEA1CS100	Electrolytic 16V 10	1	
C4011		ECEA1AS470	Electrolytic 10V 47	1	
C4012		ECQV05333JZ	Mylar 50V 0.033	1	
C4013		ECEA1CS221	Electrolytic 16V 220	1	
C4014,4015		ECKF2H121KB	Ceramic 500V 120P	2	
C4016		ECQF6222KZ	Mylar 600V 2200P	1	
C4017		ECEA1CS100	Electrolytic 16V 10	1	
C4018		VCY25223KX	Semiconductor 25V 0.022	1	
C4019		VCY25103KX	Semiconductor 25V 0.01	1	
C4020,4021		ECKF1H471KB	Ceramic 50V 470P	2	
C4022		ECEA1CS470	Electrolytic 16V 47	1	
C4023,4024		ECKF1H102ZF	Ceramic 50V 1000P	2	
			Coils		
L4001		VLQEL06F471K	470μH	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Transformer		
T4001		VLT0181		1	
			Connectors		
P4001,4002		VJP1142	3P	2	
P6009		VJP1141	2P	1	
			Chrominance Section		
			Integrated Circuits		
IC8001		AN6360		1	
IC8002		AN6363		1	
IC8003		AN6371		1	
IC8004		AN6342N		1	
IC8005		BA7007		1	
			Transistors		
Q8001		2SD636		1	
Q8002		2SC2206		1	(B,C)
Q8003		2SD636		1	
Q8004		2SC2206		1	
Q8005		2SD636		1	(Q,R,S)
Q8006		2SD636		1	
			Diodes		
D8001-8008		MA165		8	
			Resistors		
R8001		ERDS2TJ223	22K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R8002		ERDS2TJ103	10K	1	
R8003		ERDS2TJ102	1K	1	
R8004		ERDS2TJ331	330	1	
R8005		ERDS2TJ822	8.2K	1	
R8006		ERDS2TJ821	820	1	
R8007		ERDS2TJ272	2.7K	1	
R8008		ERDS2TJ331	330	1	
R8009,8010		ERDS2TJ122	1.2K	2	
R8011		ERDS2TJ684	680K	1	
R8012,8013		ERDS2TJ102	1K	2	
R8014,8015		ERDS2TJ122	1.2K	2	
R8016		EVNK6AA00B14	Variable 10K	1	
R8017		ERDS2TJ391	390	1	
R8018		ERDS2TJ103	10K	1	
R8019-8022		ERDS2TJ391	390	4	
R8023		ERDS2TJ153	15K	1	
R8024		ERDS2TJ562	5.6K	1	
R8025		ERDS2TJ681	680	1	
R8026		ERDS2TJ151	150	1	
R8027		ERDS2TJ681	680	1	
R8028		ERDS2TJ152	1.5K	1	
R8029		EVNK6AA00B23	Variable 2K	1	
R8030		ERDS2TJ562	5.6K	1	
R8031		ERD50TJ271	1/2W 270	1	
R8032		ERDS2TJ224	220K	1	
R8033		ERDS2TJ102	1K	1	
R8034		ERDS2TJ682	6.8K	1	
R8035		ERDS2TJ222	2.2K	1	
R8036		EVNK6AA00B52	Variable 500	1	
R8037		ERDS2TJ153	15K	1	
R8038,8039		ERDS2TJ103	10K	2	
R8040		ERDS2TJ562	5.6K	1	
R8041		ERDS2TJ102	1K	1	
R8042		ERDS2TJ472	4.7K	1	
R8043		ERDS2TJ471	470	1	
R8044		ERDS2TJ102	1K	1	
R8045,8046		ERDS2TJ103	10K	2	
R8047		ERDS2TJ102	1K	1	
R8048		ERDS2TJ104	100K	1	
R8049		ERDS2TJ102	1K	1	
R8050		ERDS2TJ222	2.2K	1	
R8051		ERDS2TJ224	220K	1	
R8052		ERDS2TJ473	47K	1	
R8053		ERDS2TJ274	270K	1	
R8054		ERDS2TJ392	3.9K	1	
R8055		ERDS2TJ182	1.8K	1	
R8056		ERDS2TJ122	1.2K	1	
R8057		ERDS2TJ472	4.7K	1	
R8058,8059		ERDS2TJ471	470	2	
R8060		ERDS2TJ272	2.7K	1	
R8061		ERDS2TJ473	47K	1	
R8062		ERDS2TJ331	330	1	
R8063		ERDS2TJ222	2.2K	1	
R8064		ERDS2TJ154	150K	1	
R8065		ERDS2TJ564	560K	1	
R8066		ERDS2TJ103	10K	1	
			Capacitors		
C8002		ECKF1H102KB	Ceramic 50V 1000P	1	
C8003-8005		ECKF1H103ZF	Ceramic 50V 0.01	3	
C8006		ECEA1HS010	Electrolytic 50V 1	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C8007		ECEA1CS330	Electrolytic 16V 33	1	
C8008		ECKF1H103ZF	Ceramic 50V 0.01	1	
C8009		ECKF1H331KB	Ceramic 50V 330P	1	
C8010,8011		ECKF1H103ZF	Ceramic 50V 0.01	2	
C8012		ECEA1CS100	Electrolytic 16V 10P	1	
C8013,8014		ECKF1H103ZF	Ceramic 50V 0.01	2	
C8015		ECCF1H390KC	Ceramic 50V 39P	1	
C8016		ECKF1H103ZF	Ceramic 50V 0.01	1	
C8017		ECKF1H221KB	Ceramic 50V 220P	1	
C8018		ECKF1H561KB	Ceramic 50V 560P	1	
C8019		ECEA1CS100	Electrolytic 16V 10P	1	
C8020		VCY25122KX	Semiconductor 25V 1200P	1	
C8021		ECKF1H821KB	Ceramic 50V 820P	1	
C8022		ECEA1CS100	Electrolytic 16V 10P	1	
C8023		ECQM1H183JZ	Mylar 50V 0.018	1	
C8024		ECCF1H121KC	Ceramic 50V 120P	1	
C8025		ECCF1H181KC	Ceramic 50V 180P	1	
C8026,8027		ECEA1CS330	Electrolytic 16V 33	2	
C8028		ECKF1H103ZF	Ceramic 50V 0.01	1	
C8029		ECEA1HS010	Electrolytic 50V 1	1	
C8030,8031		ECQV05104JB	Mylar 50V 0.1	2	
C8032		ECKF1H102KB	Ceramic 50V 1000P	1	
C8033		ECKF1H821KB	Ceramic 50V 820P	1	
C8034,8035		ECKF1H103ZF	Ceramic 50V 0.01	2	
C8036		ECCF1H150KC	Ceramic 50V 15P	1	
C8037		ECKF1H101KB	Ceramic 50V 100P	1	
C8038		ECKF1H103ZF	Ceramic 50V 0.01	1	
C8039		ECEA1HS2R2	Electrolytic 50V 2.2	1	
C8040		VCY25333KX	Semiconductor 25V 0.033	1	
C8041		ECEA1CS100	Electrolytic 16V 10P	1	
C8042		ECKF1H103ZF	Ceramic 50V 0.01	1	
C8043		ECCF1H040CC	Ceramic 50V 4P	1	
C8044		ECVIZW25X64	Trimmer 25P	1	
C8045		ECCF1H060DC	Ceramic 50V 6P	1	
C8046		ECEA1CS330	Electrolytic 16V 33	1	
C8047		ECEA1CS100	Electrolytic 16V 10	1	
C8048		ECKF1H221KB	Ceramic 50V 220P	1	
C8049-8052		ECKF1H103ZF	Ceramic 50V 0.01	4	
C8053		ECCF1H101KC	Ceramic 50V 100P	1	
C8054		ECCF1H121KC	Ceramic 50V 120P	1	
C8055		ECVIZW20X64	Trimmer 20P	1	
C8056		ECCF1H150KC	Ceramic 50V 15P	1	
C8057		ECKF1H103ZF	Ceramic 50V 0.01	1	
C8058		ECEA1CS100	Electrolytic 16V 10	1	
C8059		ECKF1H103ZF	Ceramic 50V 0.01	1	
C8060		ECEA1AS330	Electrolytic 10V 33P	1	
C8061		ECKF1H103ZF	Ceramic 50V 0.01	1	
C8062		ECQM1H183JZ	Mylar 50V 0.018	1	
C8063		ECEA1CS101	Electrolytic 16V 100	1	
C8064		ECEA1CS100	Electrolytic 16V 10	1	
C8065		ECCF1H390KC	Ceramic 50V 39P	1	
C8066		ECCF1H330J5	Ceramic 50V 33P	1	
C8100		ECQV05154JZ	Mylar 50V 0.15	1	
			Coils		
L8001,8002		VLQEL06F6R8K	6.8µH	2	
L8003		VLQEL06F101K	100µH	1	
L8004		VLQEL06F330K	33µH	1	
L8005		VLQEL06F101K	100µH	1	
L8006		VLQEL09F682J	6800µH	1	
L8007,8008		VLQEL06F101K	100µH	2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
L8009		VLQEL06F470K	47μH	1	
L8010		VLQEL06F560K	56μH	1	
L8011-8014		VLQEL06F101K	100μH	4	
L8015		ELM10Q011C		1	
L8016		VLQEL06F390K	39μH	1	
L8100		VLQ0103	10mH	1	
			Filters		
FL8001		VLF0192		1	
FL8002		VLF0189		1	
FL8003		VLF0191		1	
FL8004		VLF0190		1	
FL8005		VLF0143		1	
FL8006		EFCS5RQ6MS4V		1	
			Delay Line		
DL8001		VLD0014		1	
			Crystals		
X8001		VSX0068M		1	
X8002		VSX0066M		1	
		VEP04089B	Sub Audio P.C. Board Unit		
			Integrated Circuits		
IC4501		TC9145P		1	
IC4502,4503		AN6209		2	
IC4504		HA12045		1	
IC4505		TC4066BP		1	or μPD4066BC
			Transistors		
Q4501,4502		2SB641		2	(Q,R)
Q4503,4504		2SD655		2	or 2SD1330
Q4505		2SB641		1	(P,Q,R,S)
Q4506		2SD638		1	(Q,R,S)
Q4507		2SD636		1	(P,Q,R,S)
Q4508		2SB641		1	(P,Q,R,S)
Q4509-4511		2SD655		3	(E,F)
			Diodes		
D4501		RD8.2JB	Zener	1	
D4502-4510		MA165		9	
			Resistors		

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R4501-4503		ERDS2TJ104	100K	3	
R4504,4505		ERDS2TJ474	470K	2	
R4506		ERDS2TJ154	150K	1	
R4507		ERDS2TJ123	12K	1	
R4508		ERDS2TJ104	100K	1	
R4509		ERDS2TJ102	1K	1	
R4510		ERDS2TJ222	2.2K	1	
R4511		ERDS2TJ223	22K	1	
R4512		ERDS2TJ103	10K	1	
R4513		ERDS2TJ242	2.4K	1	
R4514		EVNK6AA00B24	Variable 20K	1	
R4515		ERDS2TJ472	4.7K	1	
R4516		ERDS2TJ103	10K	1	
R4517		ERDS2TJ332	3.3K	1	
R4518		ERDS2TJ181	180	1	
R4519		ERDS2TJ154	150K	1	
R4520		ERDS2TJ123	12K	1	
R4521		ERDS2TJ104	100K	1	
R4522		ERDS2TJ102	1K	1	
R4523		ERDS2TJ222	2.2K	1	
R4524		ERDS2TJ103	10K	1	
R4525		ERDS2TJ223	22K	1	
R4526		ERDS2TJ242	2.4K	1	
R4527,4528		ERDS2TJ432	4.3K	2	
R4529		ERDS2TJ332	3.3K	1	
R4530		ERDS2TJ473	47K	1	
R4531		ERDS2TJ622	6.2K	1	
R4532		ERDS2TJ154	150K	1	
R4533		ERDS2TJ103	10K	1	
R4534		ERDS2TJ473	47K	1	
R4535		ERDS2TJ622	6.2K	1	
R4536		ERDS2TJ154	150K	1	
R4537		ERDS2TJ332	3.3K	1	
R4538		EVNK6AA00B24	Variable 20K	1	
R4539		EVNK6AA00B55	Variable 500K	1	
R4540		ERDS2TJ102	1K	1	
R4541		ERDS2TJ682	6.8K	1	
R4542		ERDS2TJ153	15K	1	
R4543		ERDS2TJ101	100	1	
R4544		ERDS2TJ105	1M	1	
R4545		ERDS2TJ153	15K	1	
R4546		ERDS2TJ682	6.8K	1	
R4547,4548		ERDS2TJ105	1M	2	
R4550,4551		ERDS2TJ561	560	2	
R4552		ERDS2TJ472	4.7K	1	
R4553		ERDS2TJ181	180	1	
R4554		ERDS2TJ103	10K	1	
R4555		ERDS2TJ332	3.3K	1	
R4556,4557		ERDS2TJ223	22K	2	
R4558		ERDS2TJ101	100	1	
R4559		ERDS2TJ683	68K	1	
R4560		ERDS2TJ473	47K	1	
R4561-4563		ERDS2TJ103	10K	3	
R4564,4565		ERDS2TJ473	47K	2	
R4568,4569		ERDS2TJ183	18K	2	
R4570		ERDS2TJ103	10K	1	
R4572		ERDS2TJ103	10K	1	
R4573,4574		ERDS2TJ274	270K	2	
R4575,4576		ERDS2TJ223	22K	2	
R4577		ERDS2TJ102	1K	1	
R4578-4581		ERDS2TJ103	10K	4	
R4582,4583		ERDS2TJ151	150	2	
R4584		ERDS2TJ102	1K	1	
R4585		ERDS2TJ103	10K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R4586		ERDS2TJ474	470K	1	
R4588,4589		ERDS2TJ273	27K	2	
R4590		ERDS2TJ102	1K	1	
R4591,4592		ERDS2TJ123	12K	2	
			Capacitors		
C4501-4508		ECEA1HS010	Electrolytic 50V 1	8	
C4509		ECEA1CS100	Electrolytic 16V 10	1	
C4510		ECQM1H223JZ	Mylar 50V 0.022	1	
C4511		ECEA1HS3R3	Electrolytic 50V 3.3	1	
C4512		ECEA1HNR47SE	Electrolytic 50V 0.47	1	
C4513,4514		ECEA1AS330	Electrolytic 10V 33	2	
C4515		ECEA1CS100	Electrolytic 16V 10	1	
C4516		ECQM1H223JZ	Mylar 50V 0.022	1	
C4517		ECEA1HNR47	Electrolytic 50V 0.47	1	
C4518		ECEA1HS3R3	Electrolytic 50V 3.3	1	
C4519		ECEA1HS010	Electrolytic 50V 1	1	
C4520,4521		ECEA1AS330	Electrolytic 10V 33	2	
C4522,4523		ECQM1H822JZ	Mylar 50V 8200P	2	
C4524		ECQM1H472JZ	Mylar 50V 4700P	1	
C4525		ECEA1HS010	Electrolytic 50V 1	1	
C4526		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C4527		ECQM1H333JZ	Mylar 50V 0.033	1	
C4528		ECSF1CE154	Tantalum 16V 0.15	1	
C4529		ECSF1CE474	Tantalum 16V 0.47	1	
C4530		ECQM1H183JZ	Mylar 50V 0.018	1	
C4531		ECEA1CS470	Electrolytic 16V 47	1	
C4532		ECQM1H472JZ	Mylar 50V 4700P	1	
C4533		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C4534		ECQM1H333JZ	Mylar 50V 0.033	1	
C4535		ECQM1H183JZ	Mylar 50V 0.018	1	
C4536		ECEA1HS010	Electrolytic 50V 1	1	
C4537		ECSF1CE154	Tantalum 16V 0.15	1	
C4538		ECSF1CE474	Tantalum 16V 0.47	1	
C4539		ECEA1HS010	Electrolytic 50V 1	1	
C4540		ECEA1HS010	Electrolytic 50V 1	1	
C4541,4542		ECKF1H103ZF	Ceramic 50V 0.01	2	
C4543		ECEA1AS471	Electrolytic 10V 470	1	
C4544		ECEA1CS100	Electrolytic 16V 10	1	
C4545		ECEA1AS101	Electrolytic 10V 100	1	
C4546,4547		ECEA1CS470	Electrolytic 16V 47	2	
C4548		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C4549		ECEA1CS101	Electrolytic 16V 100	1	
C4550,4551		ECEA1CS470	Electrolytic 16V 47	2	
C4552,4553		ECEA1CN470	Electrolytic 16V 47	2	
C4554,4555		ECEA1HS3R3	Electrolytic 50V 3.3	2	
C4556		ECEA1CS471	Electrolytic 16V 470	1	
C4557		ECEA1CS221	Electrolytic 16V 220	1	
C4558,4559		ECKF1H103ZF	Ceramic 50V 0.01	2	
C4560		ECEA1CS100	Electrolytic 16V 10	1	
C4562		ECEA1CS100	Electrolytic 16V 10	1	
			Coils		
L4501,4502		VLQ0123	10mH	2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Filters		
FL4501,4502		VLF0116		2	
			Connectors		
P4501		VJP1142	3P	1	
P4502		VJP1142	3P	1	
P4503		VJP1188	4P	1	
P4504		VJP1141	2P	1	
P4505		VJP1146	10P	1	
P4506,4507		VJP1188	4P	2	
P4508		VJP1141	2P	1	
		VEP06192B	Key Board P.C. Board Unit		
			Transistor		
Q6501		2SD636		1	
			Diodes		
D6501-6505		LN81RCPHL	LED	5	
D6506		LN41YCPHL	LED	1	
D6507		LN31GCPUHL	LED	1	
D6508-6511		LN81RCPHL	LED	4	
			Resistors		
R6502		ERD25TJ681	680	1	
R6503		ERD25TJ122	1.2K	1	
R6504		ERD25TJ272	2.7K	1	
R6505		ERD25TJ472	4.7K	1	
R6506		ERD25TJ822	8.2K	1	
R6507		ERD25TJ513	51K	1	
R6508		ERD25TJ623	62K	1	
R6509,6510		ERD25TJ223	22K	2	
R6511-6516		ERD25TJ821	820	6	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Switches		
SW6501-6508		EVQPY12K		8	
SW6509,6510		VSP0111		2	
			Connectors		
P6007		VJP1143	5P	1	
P6008		VJP1145	8P	1	
P6014		VJP1188	4P	1	
P6015		VJP1141	2P	1	
P6503		VJP1141	2P	1	
			Miscellaneous		
		VMD0398	LED Holder	1	
		VMD0399	LED Holder V	1	
		KL-04	LED Spacer	3	
		VEP07156A	TV Demodulator P.C. Board Unit		
			Integrated Circuits		
IC701		μPC574JK		1	
IC703		BN5115		1	
IC705		AN5130		1	
			Transistors		
Q701,702		2SB641		2	(Q,R,S,T)
					or 2SA564(Q,R,S,T),
					2SA733(Q,P,K)
Q703		2SD637		1	(Q,R,S,T)
					or 2SC1685(Q,R,S,T),
					2SC945A(Q,P,K)
Q704		2SC1687		1	
Q705		2SB642		1	(Q,R,S,T)
					or 2SA564A(Q,R,S,T)
Q706		2SD636		1	(S,T)
					or 2SC945A(K,P,Q)
Q707		2SD637		1	(Q,R,S,T)
					or 2SC1685(Q,R,S,T),
					2SC945A(Q,P,K)
Q708		2SC1687		1	
Q709		2SD637		1	(Q,R,S,T)
					or 2SC1685(Q,R,S,T),
					2SC945A(Q,P,K)
Q710		2SA720		1	(Q,R,S)

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
Q711,712		2SB642		2	(Q,R,S,T)
					or 2SA564A(Q,R,S,T)
			Diodes		
D701-704		MA165		4	or 1SS133T
D705		MA26WB		1	or MA27WB
D706,707		MA165		2	or 1SS133T
D708		RD8.2EB2	Zener	1	
D709		MA165		1	or 1SS133T
D710		RD8.2EB2	Zener	1	
			Resistors		
R701,702		ERDS2TJ223	22K	2	
R703		ERDS2TJ153	15K	1	
R704,705		ERDS2TJ223	22K	2	
R706		ERDS2TJ473	47K	1	
R707		ERDS2TJ474	470K	1	
R708		ERDS2TJ154	150K	1	
R709		ERDS2TJ153	15K	1	
R710		ERDS2TJ470	47	1	
R711		ERDS2TJ390	39	1	
R712		ERDS2TJ104	100K	1	
R713		ERDS2TJ392	3.9K	1	
R714		EVN50AA00B23	Variable 2K	1	
R715		ERDS2TJ562	5.6K	1	
R716		ERDS2TJ272	2.7K	1	
R717		EVN50AA00B23	Variable 2K	1	
R718		ERDS2TJ562	5.6K	1	
R720		ERDS2TJ562	5.6K	1	
R721		ERDS2TJ821	820	1	
R722		ERDS2TJ470	47	1	
R723		ERO10TKG1001	Metal 1K	1	
R725		ERDS2TJ122	1.2K	1	
R727		ERDS2TJ333	33K	1	
R728		ERDS2TJ183	18K	1	
R729		ERDS2TJ225	2.2M	1	
R730		ERDS2TJ332	3.3K	1	
R731		ERDS2TJ470	47	1	
R732		ERO10TKG8200	Metal 820	1	
R733		ERDS2TJ183	18K	1	
R734		ERDS2TJ562	5.6K	1	
R735		ERDS2TJ680	68	1	
R736		EVN50AA00B14	Variable 10K	1	
R737		ERDS2TJ102	1K	1	
R738		ERDS2TJ470	47	1	
R739		ERDS2TJ221	220	1	
R740		ERDS2TJ563	56K	1	
R741		ERDS2TJ102	1K	1	
R742		ERDS2TJ683	68K	1	
R743		ERDS2TJ122	1.2K	1	
R744		ERDS2TJ271	270	1	
R745		ERDS2TJ274	270K	1	
R747		ERDS2TJ822	8.2K	1	
R748		ERDS2TJ392	3.9K	1	
R749,750		ERDS2TJ562	5.6K	2	
R751		ERDS2TJ821	820	1	
R752		ERDS2TJ122	1.2K	1	
R753,754		ERDS2TJ821	820	2	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R755	ERDS2TJ392	3.9K	1	
R757	ERDS2TJ562	5.6K	1	
R760	ERDS2TJ152	1.5K	1	
R761	ERDS2TJ332	3.3K	1	
R762	ERDS2TJ471	470	1	
R763	ERDS2TJ750	75	1	
R765,766	ERDS2TJ221	220	2	
		Capacitors		
C703	ECEA1CS330	Electrolytic 16V 33	1	
C704	ECEA1CS220	Electrolytic 16V 22	1	
C705	ECEA1CS100	Electrolytic 16V 10	1	
C706,707	ECKF1H103ZF	Ceramic 50V 0.01	2	
C708	ECEA1CS330	Electrolytic 16V 33	1	
C709	ECQM1H103KZ	Mylar 50V 0.01	1	or ECQV05103JZ
C710	ECEA50ZR68	Electrolytic 50V 0.68	1	
C711	ECKF1H103ZF	Ceramic 50V 0.01	1	
C712	ECEA1CS330	Electrolytic 16V 33	1	
C713	ECCF1H150JC	Ceramic 50V 15P	1	
C714,715	ECKF1H103ZF	Ceramic 50V 0.01	2	
C716	ECCF1H330JC	Ceramic 50V 33P	1	
C717	ECCF1H060DC	Ceramic 50V 6P	1	
C718	ECCF1H080DC	Ceramic 50V 8P	1	
C719	ECCF1H101JP	Ceramic 50V 100P	1	
C720	ECKF1H222KB	Ceramic 50V 2200P	1	
C721-724	ECKF1H103ZF	Ceramic 50V 0.01	4	
C725	ECCF1H150JC	Ceramic 50V 15P	1	
C726	ECEA1HS010	Electrolytic 50V 1	1	
C727	ECEA1CS101	Electrolytic 16V 100	1	
C728	ECKF1H103ZF	Ceramic 50V 0.01	1	
C729	ECEA50Z1	Electrolytic 50V 1	1	
C730	ECKF1H103ZF	Ceramic 50V 0.01	1	
C731	ECEA1EN4R7	Electrolytic 25V 4.7	1	
C732	ECCF1H220JC	Ceramic 50V 22P	1	
C733	ECEA1CS100	Electrolytic 16V 10	1	
C734	ECCF1H680JS	Ceramic 50V 68P	1	
C735	ECCF1H820JP	Ceramic 50V 82P	1	
C736	ECCF1H220JC	Ceramic 50V 22P	1	
C737,738	ECCF1H020CC	Ceramic 50V 2P	2	
C739	ECCF1H101JP	Ceramic 50V 100P	1	
C740	ECKF1H103ZF	Ceramic 50V 0.01	1	
C741	ECEA1EN3R3	Electrolytic 25V 3.3	1	
C742	ECQM1H223KZ	Mylar 50V 0.022	1	or ECQV05223JZ
C743	ECQV05224JZ	Mylar 50V 0.22	1	or ECQM1H224KV
C744	ECCF1H050CC	Ceramic 50V 5P	1	
C745	ECCF1H560JP	Ceramic 50V 56P	1	
C746-748	ECKF1H103ZF	Ceramic 50V 0.01	3	
C749	ECKF1H102KB	Ceramic 50V 1000P	1	
C750	ECEA1HS2R2	Electrolytic 50V 2.2	1	
C751	ECKF1H102KB	Ceramic 50V 1000P	1	
C755	ECEA1CS470	Electrolytic 16V 47	1	
C756	ECEA1CS100	Electrolytic 16V 10	1	
C757	ECEA1JS220	Electrolytic 63V 22	1	
C758	ECEA1HS010	Electrolytic 50V 1	1	
C759	ECKF1H103ZF	Ceramic 50V 0.01	1	
C762	ECEA1CS330	Electrolytic 16V 33	1	
C763	ECCF1H820JP	Ceramic 50V 82P	1	
C769	ECCF1H100DC	Ceramic 50V 10P	1	
C770	ECCF1H101JP	Ceramic 50V 100P	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		Coils		
L701	VLQEL06F100K	10μH	1	
L702	VLQEL06F560K	56μH	1	
L704	VLQ80W102K	1mH	1	
L705	VLQEL06F120K	12μH	1	
L706	VLQEL06F2R2K	2.2μH	1	
L707	ELQSR47KB	0.47μH	1	
L708	VLQEL06F100K	10μH	1	
		Transistors		
T701	EIM5A521		1	
T702	EULHLB318		1	
T703	EIM5A521		1	
T704	VLT0312A		1	or EIV10E301F
T705	VLT0301		1	or EIV10E309A
T706	EULHLB319		1	
T707	VLT0312A		1	or EIV10E301F
T712	EIM5A521		1	
		Crystal		
X701	EFCS5R5MW3		1	or VLF0182
		Connectors		
P701	VJP1141	2P	1	
P702	VJP1143	5P	1	
P703	VJP1144	6P	1	
P706	VJP1142	3P	1	
P7002	VJP1237	10P	1	
		Miscellaneous		
	TNV77759F2	Tuner		⚠
	VSC0902	Shield Case (Large-Top)		
	VSC0903	Shield Case (Large-Main)		
	VSC0904	Shield Case (Large-Bottom)		
	VSC0905	Shield Case (Small-Top)		
	VSC0906	Shield Case (Small-Main)		
	VSC0907	Shield Case (Small-Bottom)		

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		VEP07157A	Decoder P.C. Board Unit		
			Integrated Circuits		
IC7001		BN5823		1	
IC7002		LA7755		1	
IC7003		TC4066BP		1	or µPD4066BC
IC7004,7005		AN5215		2	
			Transistors		
Q7001		2SD637		1	(Q,R,S,T)
					or 2SC1685(Q,R,S,T)
Q7002		2SB641		1	(Q,R,S,T)
					or 2SA564(Q,R,S,T)
Q7003,7004		2SD637		2	(Q,R,S,T)
					or 2SC1685(Q,R,S,T)
Q7005		2SB641		1	(Q,R,S,T)
					or 2SA564(Q,R,S,T)
Q7006-7015		2SD637		10	(Q,R,S,T)
					or 2SC1685(Q,R,S,T)
Q7016-7019		2SD636		4	(Q,R,S,T)
					or 2SC1684(Q,R,S,T),
					2SC945A(Q,P,K)
			Diodes		
D7001-7004		MA165		4	or 1SS133T
D7005,7006		RD8.2EB2	Zener	2	or MA1082
D7007-7011		MA165		5	or 1SS133T
D7016		MA165		1	or 1SS133T
			Resistors		
R7001		EVNK6AA00B53	Variable 5K	1	
R7002		ERDS2TJ224	220K	1	
R7003		ERDS2TJ333	33K	1	
R7004		ERDS2TJ182	1.8K	1	
R7005		ERDS2TJ152	1.5K	1	
R7006		ERDS2TJ563	56K	1	
R7007		ERDS2TJ682	6.8K	1	
R7008,7009		ERDS2TJ102	1K	2	
R7010,7011		ERDS2TJ103	10K	2	
R7012,7013		ERDS2TJ473	47K	2	
R7014		ERD2FCG220	Fuse 22	1	⚠
R7015		ERDS2TJ473	47K	1	
R7016,7017		ERDS2TJ474	470K	2	
R7018		ERDS2TJ104	100K	1	
R7019		ERDS2TJ182	1.8K	1	
R7020		ERDS2TJ273	27K	1	
R7021		ERDS2TJ102	1K	1	
R7022		ERDS2TJ333	33K	1	
R7023		ERDS2TJ104	100K	1	
R7024		ERDS2TJ103	10K	1	
R7025		ERDS2TJ104	100K	1	
R7026		EVNK6AA00B15	Variable 100K	1	
R7027		ERDS2TJ154	150K	1	
R7028		EVNK6AA00B54	Variable 50K	1	
R7029		ERDS2TJ823	82K	1	
R7030		ERDS2TJ104	100K	1	
R7031		ERDS2TJ564	560K	1	
R7032		ERDS2TJ104	100K	1	
R7033		ERDS2TJ684	680K	1	
R7034		ERD2FCG220	Fuse 22	1	⚠
R7035		ERDS2TJ124	120K	1	
R7036		ERDS2TJ683	68K	1	
R7037		ERDS2TJ102	1K	1	
R7038		ERDS2TJ332	3.3K	1	
R7039		ERDS2TJ104	100K	1	
R7040		EVNK6AA00B14	Variable 10K	1	
R7041		ERDS2TJ473	47K	1	
R7042		ERDS2TJ332	3.3K	1	
R7043		ERDS2TJ104	100K	1	
R7044		EVNK6AA00B14	Variable 10K	1	
R7045		ERDS2TJ473	47K	1	
R7046		ERDS2TJ104	100K	1	
R7047,7048		ERDS2TJ102	1K	2	
R7049-7053		ERDS2TJ103	10K	5	
R7054		ERDS2TJ273	27K	1	
R7055		ERDS2TJ102	1K	1	
R7056		ERDS2TJ152	1.5K	1	
R7057		ERDS2TJ103	10K	1	
R7058		ERDS2TJ273	27K	1	
R7059-7061		ERDS2TJ103	10K	3	
R7062		ERDS2TJ273	27K	1	
R7063		ERD2FCG220	Fuse 22	1	⚠
R7064		ERDS2TJ152	1.5K	1	
R7065		ERDS2TJ103	10K	1	
R7066		ERDS2TJ330	33	1	
R7067,7068		ERDS2TJ472	4.7K	2	
R7069		ERDS2TJ152	1.5K	1	
R7070		ERDS2TJ104	100K	1	
R7071-7074		ERDS2TJ471	470	4	
R7088		ERDS2TJ563	56K	1	
R7089		ERDS2TJ103	10K	1	
R7090		ERDS2TJ102	1K	1	
R7092		ERDS2TJ183	18K	1	
R7096		ERDS2TJ823	82K	1	
R7097		ERDS2TJ563	56K	1	
R7098		ERDS2TJ103	10K	1	
R7099		ERDS2TJ823	82K	1	
			Capacitors		
C7001		ECEA1CS100	Electrolytic 16V 10	1	
C7002		ECEA0JS471	Electrolytic 6.3V 470	1	
C7003		ECQM1H333JV	Mylar 50V 0.033	1	or ECQV05333JZ
C7004		ECQM1H822JZ	Mylar 50V 8200P	1	
C7005		ECQM1H152JZ	Mylar 50V 1500P	1	
C7006		ECKF1H103ZF	Ceramic 50V 0.01	1	
C7007		ECQM1H223JZ	Mylar 50V 0.022	1	or ECQV05223JZ
C7008		ECEA1CS100	Electrolytic 16V 10	1	
C7009		ECEA1CS221	Electrolytic 16V 220	1	
C7010		ECEA1CS100	Electrolytic 16V 10	1	
C7011		ECEA0JS101	Electrolytic 6.3V 100	1	
C7012,7013		ECEA1ES4R7	Electrolytic 25V 4.7	2	
C7014,7015		ECKF1H103ZF	Ceramic 50V 0.01	2	
C7016		ECEA1CS470	Electrolytic 16V 47	1	
C7017		ECEA1CS101	Electrolytic 16V 100	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C7018		ECQM1H273JV	Mylar 50V 0.027	1	or ECQV05273JZ
C7019		ECEA1HSR47	Electrolytic 50V 0.47	1	
C7020		ECEA1HS2R2	Electrolytic 50V 2.2	1	
C7021		ECEA1HS010	Electrolytic 50V 1	1	
C7022		ECEA1HS2R2	Electrolytic 50V 2.2	1	
C7023		ECEA1HSR47	Electrolytic 50V 0.47	1	
C7024		ECQM1H223JZ	Mylar 50V 0.022	1	or ECQV05223JZ
C7025		ECEA1AS101	Electrolytic 10V 100	1	
C7026-7028		ECEA1CS100	Electrolytic 16V 10	3	
C7029		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C7030		ECQM1H223JZ	Mylar 50V 0.022	1	
C7031		ECQM1H152JZ	Mylar 50V 1500P	1	
C7032		ECQM1H223JZ	Mylar 50V 0.022	1	
C7033		ECQM1H152JZ	Mylar 50V 1500P	1	
C7034		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C7035,7036		ECKF1H102KB	Ceramic 50V 1000P	1	
C7037		ECEA50Z1	Electrolytic 50V 1	1	
C7038,7039		ECEA1CS101	Electrolytic 16V 100	2	
C7040		ECKF1H102KB	Ceramic 50V 1000P	1	
C7041		ECKF1H103ZF	Ceramic 50V 0.01	1	
C7042		ECEA1CS100	Electrolytic 16V 10	1	
C7043		ECKF1H102KB	Ceramic 50V 1000P	1	
C7044		ECCF1H120JC	Ceramic 50V 12P	1	
C7045		ECKF1H102KB	Ceramic 50V 1000P	1	
C7046		ECKF1H103ZF	Ceramic 50V 0.01	1	
C7047		ECCF1H120JC	Ceramic 50V 12P	1	
C7048		ECKF1H102KB	Ceramic 50V 1000P	1	
C7049		ECEA1CS100	Electrolytic 16V 10	1	
C7050		ECCF1H101JC	Ceramic 50V 100P	1	
			Coil		
L7001		VLQ80W102K	1mH	1	
			Transformers		
T7001		ELM10S335A		1	
T7002,7003		EIS10E303D		2	
			Crystals		
X7001,7002		EFCS5R5MS4		2	
X7003,7004		EFCS5R74MS4B		2	
X7005,7006		VLF0249		2	
			Connectors		
P7001		VJP1143	5P	1	
P7003		VJP1188	4P	1	
P7006		VJP1142	3P	1	
P7007		VJP1144	6P	1	
P7008		VJP1141	2P	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		VEP07163A	CH Select & Timer P.C.		
			Board Unit		
			Integrated Circuit		
IC7501		MN1435VXB		1	
			Transistors		
Q7201		2SD636		1	or 2SD637, 2SC1684,
					2SC685, 2SC945A
Q7202		2SB641		1	or 2SB642, 2SA564,
					2SA564A, 2SA733
Q7501		2SD636		1	or 2SD637
Q7502		2SB642		1	or 2SA564A
Q7503		2SD636		1	or 2SD637, 2SC1684,
					2SC1685, 2SC945A
			Diodes		
D7201-7212		LN31GCPUHL	LED	12	
D7225-7248		MA161		14	
D7249		MA165		1	or 1SS133T
D7250,7251		LN31GCPUHL	LED	2	
D7501,7502		MA165		2	or 1SS133T
D7503		MA161		1	or 1SS53
D7504		MA165		1	or 1SS33T
D7505		MA165		1	or 1SS53
D7507,7508		MA165		2	or 1SS133T
D7509		RD12JB1	Zener	1	
D7510		MA165		1	or 1SS133T
			Resistors		
R7201		ERDS2TJ682	6.8K	1	
R7202		ERDS2TJ683	68K	1	
R7203		ERDS2TJ153	15K	1	
R7204		ERDS2TJ103	10K	1	
R7205		ERDS2TJ153	15K	1	
R7206		ERDS2TJ101	100	1	
R7207,7208		ERDS2TJ104	100K	2	
R7210		ERDS2TJ681	680	1	
R7211-7222		EWEM8E450B24	Variable 20K	12	
R7223		ERDS2TJ122	1.2K	1	
R7501		ERDS2TJ153	15K	1	
R7502		ERDS2TJ682	6.8K	1	
R7503		ERDS2TJ104	100K	1	
R7504		ERDS2TJ103	10K	1	
R7505		EVNK6AAB15	Variable 100K	1	
R7506		ERDS2TJ273	27K	1	
R7507		ERDS2TJ473	47K	1	
R7508		ERDS2TJ153	15K	1	
R7509		ERDS2TJ473	47K	1	
R7510		ERDS2TJ153	15K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Capacitors		
C7201		ECEA1HK2R2	Electrolytic 50V 2.2	1	
C7202		ECQM1H223KZ	Mylar 50V 0.022	1	or ECQV05223JZ
C7203		ECKF1H103ZF	Ceramic 50V 0.01	1	
C7502		ECCF1H101JC	Ceramic 50V 100P	1	
C7505		ECEA1ES100	Electrolytic 25V 10	1	
			Resistor Arrays		
RX7501,7502		EXBEQ7473K		2	
			Display Tube		
DP7501		VSL0010B		1	or VSL0010A
			Switches		
SW7201		VSP0121		1	
SW7213-7224		EVQREAL05		12	
SW7225		ESE153A		1	
SW7227		VSP0111		1	
SW7501		VSP0111		1	
SW7502		EVQQ8R13K		1	
SW7503		ESD14182		1	
SW7504-7510		EVQQJ104K		7	
			Connectors		
P6013		VJP1151	6P	1	
P7005		VJP1237	10P	1	
P7503		VJP1142	3P	1	
			Miscellaneous		
		KL-04	LED Spacer	14	
		VMX0469	Display Tube Spacer	2	
		VGQ0301	Display Tube Holder	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		VEP07164A	Back-Up P.C. Board Unit		
			Transistors		
Q7504		2SC1384		1	(R1)
Q7505		2SD636		1	(Q,R,S)
					or 2SC1684(Q,R,S),
					2SD637(Q,R,S),
					2SC1685(Q,R,S)
			Diodes		
D7511		RD6.8EB	Zener	1	or EQA02-07AB,
					MA1068LM
D7512,7513		MA165		2	or 1SS133
D7514,7515		1S955		2	
D7516		RD16JB1	Zener	1	
D7517		MA165		1	or 1SS133
			Resistors		
R7511		ERDS2TJ104	100K	1	
R7512		ERDS2TJ122	1.2K	1	
R7513		ERDS2TJ393	39K	1	
R7514		ERDS2TJ821	820	1	
R7516		ERDS2TJ122	1.2K	1	
R7519		ERDS2TJ103	10K	1	
R7520		ERDS2TJ100	10	1	
R7521		ERDS2TJ560	56	1	
			Capacitors		
C7501		ECKF1H103ZF	Ceramic 50V 0.01	1	
C7503		ECEB1ES472	Electrolytic 25V 4700	1	
C7504		ECEA1CS101	Electrolytic 16V 100	1	
C7506		ECEA25Z47	Electrolytic 25V 47	1	
C7507		ECQM1H472KZ	Mylar 50V 4700P	1	
C7508		ECKF1H102KB	Ceramic 50V 1000P	1	
C7509		ECEA1CS470	Electrolytic 16V 47	1	
C7510		ECEA16Z10B	Electrolytic 16V 10	1	
C7511		ECKF1H103ZF	Ceramic 50V 0.01	1	
			Transformer		
T7501		VLT0179	DD Converter Transformer	1	
			Connector		
P7504		VJP1141	2P	1	
L7501		VLQEL06R101K	Coil 100μH	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
	ENC17571	RF Converter Unit	1	⚠
		Integrated Circuit		
IC1	AN3130	Modulator	1	
		Transistor		
Q1	2SC1215R		1	(UO-1)
		Diodes		
D1,2	1SS86	Mixer	2	
		Resistors		
R1	ERJ8GCSJ391	Chip 390	1	
R2	ERJ8GCSJ681	Chip 680	1	
R3	ERJ8GCSJ000	Chip 0	1	
R4	EVN1ACA00B14	Variable 10KB	1	
R5	ERJ8GCSJ000	Chip 0	1	
R6	ERJ8GCSJ221	Chip 220	1	
R7	ERD10TJ823	1/8W 82K	1	
R8	ERD10TJ472	1/8W 4.7K	1	
R9	ERJ8GCSJ331	Chip 330	1	
R10	ERJ8GCSJ122	Chip 1.2K	1	
R11	ERJ8GCSJ101	Chip 100	1	
R12	ERJ8GCSJ221	Chip 220	1	
R13	ERJ8GCSJ560	Chip 56	1	
R14	ERJ8GCSJ680	Chip 68	1	
R15,16	ERD10TJ822	1/8W 8.2K	2	(UO-1)
R17	ERD10TJ331	1/8W 330	1	(UO-1)
		Capacitors		
C1	ECUM1H270	Chip 50V 27P	1	
C2	ECEA1CK100	Electrolytic 16V 10	1	or ECEA1CS100
C3	ECEA1HK0R47	Electrolytic 50V 0.47	1	or ECEA1HS0R47
C4	ECUM1H102MD	Chip 50V 1000P	1	
C5	ECEA1CK100	Electrolytic 16V 10	1	or ECEA1CS100
C6,7	ECUM1H104MD	Chip 50V 0.1	2	
C8	ECUM1H561MD	Chip 50V 560P	1	
C9	ECEA1HK0R47	Electrolytic 50V 0.47	1	or ECEA1CS0R47
C10	ECUM1H220KS	Chip 50V 22P	1	
C11	ECEA1HK2R2	Electrolytic 50V 2.2	1	or ECEA1CS2R2
C12	ECUM1H080	Chip 50V 8P	1	
C13	ECUM1H270	Chip 50V 27P	1	
C14	ECUM1H050	Chip 50V 5P	1	
C15	CY2102PE	1000P	1	(UO-1)
C16	CX2101KU	100P	1	(UO-1)
C17	ECCF1H010	Ceramic 1P	1	(UO-1)
C18	CX2140	14P	1	(UO-1)
C19	CU20R2QA	0.2P	1	(UO-1)
C20	CX2040	4P	1	(UO-1)
C21			1	(UO-1) Not Available

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		Coils		
L1	ELEPL820KA	Choke 82μH	1	or FL5H820, LAL04NA820
L2	LB162609EA02	Choke	1	(UO-1)
L3	LNP01AV05CW		1	
L4	LN70W350VL01		1	(UO-1)
		Transformers		
T1	TRCA712V	5.5MHz Oscillator	1	
T2	BRNA013V		1	
		Miscellaneous		
	VJP1143	Connector	1	
	ERJ8GCJ000	Chip Jumper	1	
	BPD30AV10YGZ	P.C. Board	1	
		Power Transformer		
		P.C. Board Unit		
		Diodes		
D1001	S1RBA10F4		1	
		Resistors		
R1001	ERQ12HJR68	Fuse Resistor 1/2W 0.68	1	
R1002	ERQ14AJ121	Fuse Resistor 1/4W 120	1	
		Capacitors		
C1001	ECEA1ES222	Electrolytic 25V 2200	1	
C1002	ECKF1H103ZF	Ceramic 50V 0.01	1	
		Connector		
P1006	VJP1141	2P	1	
		Fuse		
F1001,1002	XBA2X10TR0C	1A	2	⚠
		Miscellaneous		
	ETP66PS261E	Power Transformer	1	⚠
	TJC6320	Fuse Holder	4	⚠
	VJA0111	AC Cord		
	VMZ0487	Power Transformer Barrier		⚠
	VMZ0411	Terminal Barrier		

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Supply Photo TR		
			P.C. Board		
		PN150NV	Photo TR	1	
		VMD0092	Photo TR Holder (L)	1	
			Take-Up Photo TR		
			P.C. Board		
		PN150NV	Photo TR	1	
		VMD0373	Photo TR Holder (R)	1	
			Motor Connection		
			P.C. Board		
		ECEA1HN010	Electrolytic Capacitor	1	
			50V 1		
P6001		VJP1107	Connector 10P	1	
			Reel Sensor P.C. Board		
		DN6838A	Hall IC	1	
P6004		VJP1149	Connector 3P	1	
			Sensor LED P.C. Board		
		GL450	LED	1	
		VMD0465	LED Holder	1	
		VJB00A14	Sensor LED Connection	1	
			Board		
			A/C, AE Head P.C. Board		
		ERD10TJ100	Resistor 1/8W 10	2	
P6016		VJP1235	Connector 8P	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			AV Jack P.C.Board		
			Connector		
P3002		VJP1247	7P	1	
			Audio Jack P.C.Board		
			Connector		
P3003		VJP1142	3P	1	